

ENVIRONMENTAL REPORT 2003



Oki is actively promoting global environment and local environment conservation initiatives for all company operations to provide products which contribute to the advancement of the information society.
(Environmental philosophy)

Corporate Profile

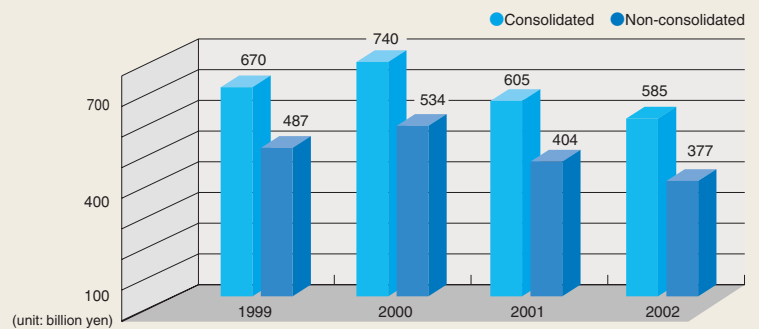
Oki Electric Industry was founded in 1881 by Kibataro Oki, with a strong wish to produce communications equipment in Japan. Marking the 122nd year of its foundation in 2003, the company is the longest-established manufacturer of communications equipment. Along with the progress of telecommunications in Japan, Oki is now involved in operations focused on three major business segments; telecommunications systems related to IP networks, information systems using computers, and electronic devices including system LSIs and optical components. Based on networks spread throughout the world, an "e-society" is being created, where national and cultural barriers are being removed, and every activity is carried out fairly and securely with no borders in time and space.

In line with our corporate vision "Oki, Network Solutions for a Global Society", the Oki group is providing a rich variety of business solutions that support "e-society" as a company that delivers peace of mind to our customers.

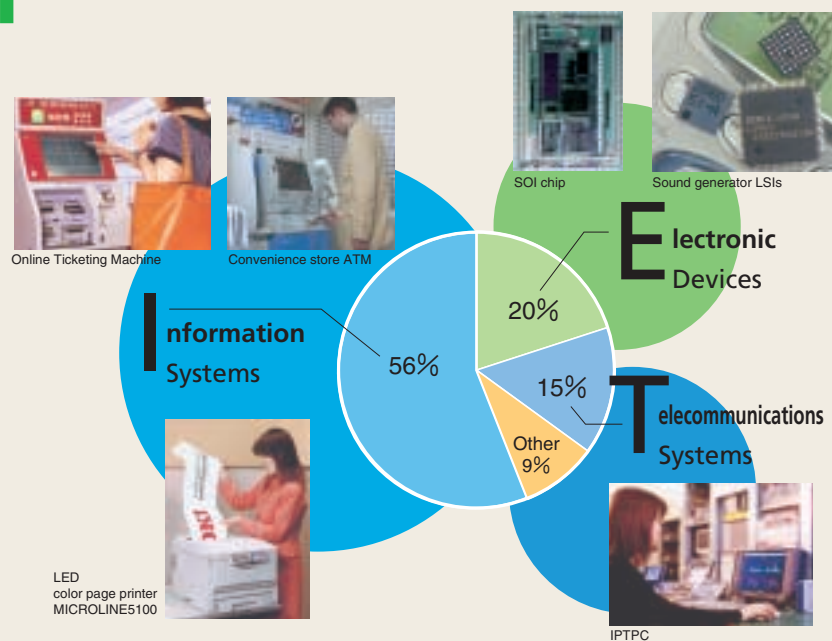
Corporate Overview

Company name	Oki Electric Industry Co., Ltd.
Foundation	January 1881
Establishment	November 1, 1949
Capital stock	JY67.8 billion (as of March 31, 2003)
Number of employees	6,067 (non-consolidated) Japan: 16,869 (consolidated) Overseas: 5,651 as of March 31, 2003
President	Katsumasa Shinozuka
Head office	7-12 Toranomom 1-chome, Minato-ku, Tokyo
Main products	Telecommunications systems, information systems, and electronic devices

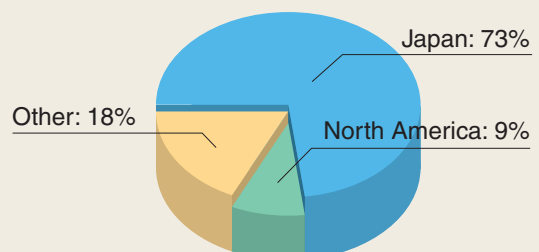
Transition of Sales



Transition of Sales by Business Segment (Consolidated)



2002 Sales by Market



2002 Topics

- **June 2002 - Establishment of a "Month of the Environment".....(P8)**
Starting from 2002, we established the month of June as the Month of the Environment, and held environment-related events at each site.
- **July 2002 - Reduction of CO₂ emissions through restructuring of distribution for semiconductor products(P21)**
By establishing a distribution center for overseas, we shortened air transport routes to reduce CO₂ emissions.
- **September 2002 - Publication of "Green Procurement Standard".....(P11)**
To put priority on articles with a small environmental impact when purchasing parts and materials, we published "Green Procurement Standard".
- **November 2002 - Completely lead-free soldering for all semiconductor pins ... (P12)**
We completed the development of technology for lead-free soldering for semiconductor pins, and installed the facilities.
- **November 2001 - Switchover of materials for major products to steel sheets with chromium-free surface treatment(P12)**
We replaced the chromium-coated steel sheets with steel sheets with chromium-free coating that does not contain hexavalent chromium.
- **December 2002 - Expansion of green procurement through system standardization(P8)**
We unified the purchasing system for office consumables of the 55 group companies, and narrowed down the products for purchase to 1500 articles that comply with our Green Procurement Standard.
- **March 2003 - Achievement of zero emission at major production sites ... (P17)**
We achieved zero emission at all nine major production sites of the Oki group.

Scope of Data Presented in This Report

(The data in this report applies to the following locations and Oki group companies:)

Oki Electric Summary of Operations

Toranomon Head office
Hachioji Electronic device development
Shibaura & Makuhari Electronic communication equipment development
Honjo Telecommunication and data transmission equipment production
Takasaki Information processing equipment development
Tomioka Information terminal equipment production
Numazu Transport systems, acoustic positioning systems development/production
Warabi Software development

Group Companies Summary of Operations

Oki Data Corporation Printer, fax machine, peripheral development/production
Oki Printed Circuits Co., Ltd. Printed circuit board design/production
Nagano Oki Electric Co., Ltd. Electronic device design/production/manufacturing service
Shizuoka Oki Electric Co., Ltd. Measuring, control equipment development/production
Miyagi Oki Electric Co., Ltd. Semiconductor IC/LSI production
Miyazaki Oki Electric Co., Ltd. Semiconductor IC/LSI production
Tama Oki Electric Co., Ltd. Semiconductor IC/LSI inspection
Oki Sensor Device Corporation Electronic component development/production
Oki Micro Engineering Co., Ltd. Motor, solenoid development/production
Oki Power Tech Co., Ltd. Power supply unit development/production
Oki Erfolg Co., Ltd. Component, die, cabinet production
Oki Engineering Co., Ltd. Development design, measurement and analysis
Oki Logistics Co., Ltd. Physical distribution
Oki Customer Adtech Co., Ltd. Maintenance and service
Oki Communication Systems Co., Ltd. Communication equipment, component design/production
Oki Supply Center Co., Ltd. Component management
Oki (Thailand) Co., Ltd. Semiconductor integrated circuit production
Oki (UK) Ltd. Printer, fax machine production
Oki Data Manufacturing (Thailand) Co., Ltd. Printer, fax machine production

* This environmental report has been prepared based on the results of the programs/activities of Oki Electric Industry, as well as Oki group companies for the fiscal year 2002 (April 1, 2002 through March 31, 2003). The next updated report is scheduled for June 2004.

* This report references "Environmental Report Guidelines 2000" issued by the Ministry of the Environment and "Environmental Reporting Guidelines 2001" issued by the Ministry of Economy, Trade and Industry.

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Katsumasa Shinozuka
President and CEO

We deliver peace of mind.

Under its corporate vision “Oki, Network Solutions for a Global Society”, Oki Electric is conducting its corporate activities from the perspective of “Delivering network solutions to bring our customers peace of mind.” One essential element for delivering “peace of mind” to our customers is our work for the environment.

The Oki group established a plan for environmental activities (Eco Plan 21) in 1999, and has since then been steadily executing its environmental program. In 2002, two years ahead of the initial plan, we achieved zero emission at all nine major production sites in Japan. We further published Green Procurement Standard, to procure parts and materials while putting a priority on articles with a small environmental impact, and, based on the standard, switched to steel sheets with chromium-free surface treatment for our major products. In semiconductor distribution, we shortened air transport routes to reduce CO₂ emissions by establishing new distribution sites for overseas. We were also able to generate results in the development of environment-related technologies, such as lead-free soldering for printed circuit boards and semiconductors.

We are continuing to execute our Eco Plan 21 also in fiscal 2003. In particular, we will put our focus on contributing to the environment through our products, on promoting energy saving of products, on the control of environment impacting substances contained in our products, and on recycling of used products.

I am hoping that this report provides you with some insights into the efforts of the Oki group towards environmental problems, and our attitude to deliver “peace of mind” to every individual customer.

Basic Environmental Policy

■ Environmental Policy

Oki is actively developing global and local environmental protection activities in all company operations to provide products which contribute to the advancement of the information society.

■ Activity Guidelines

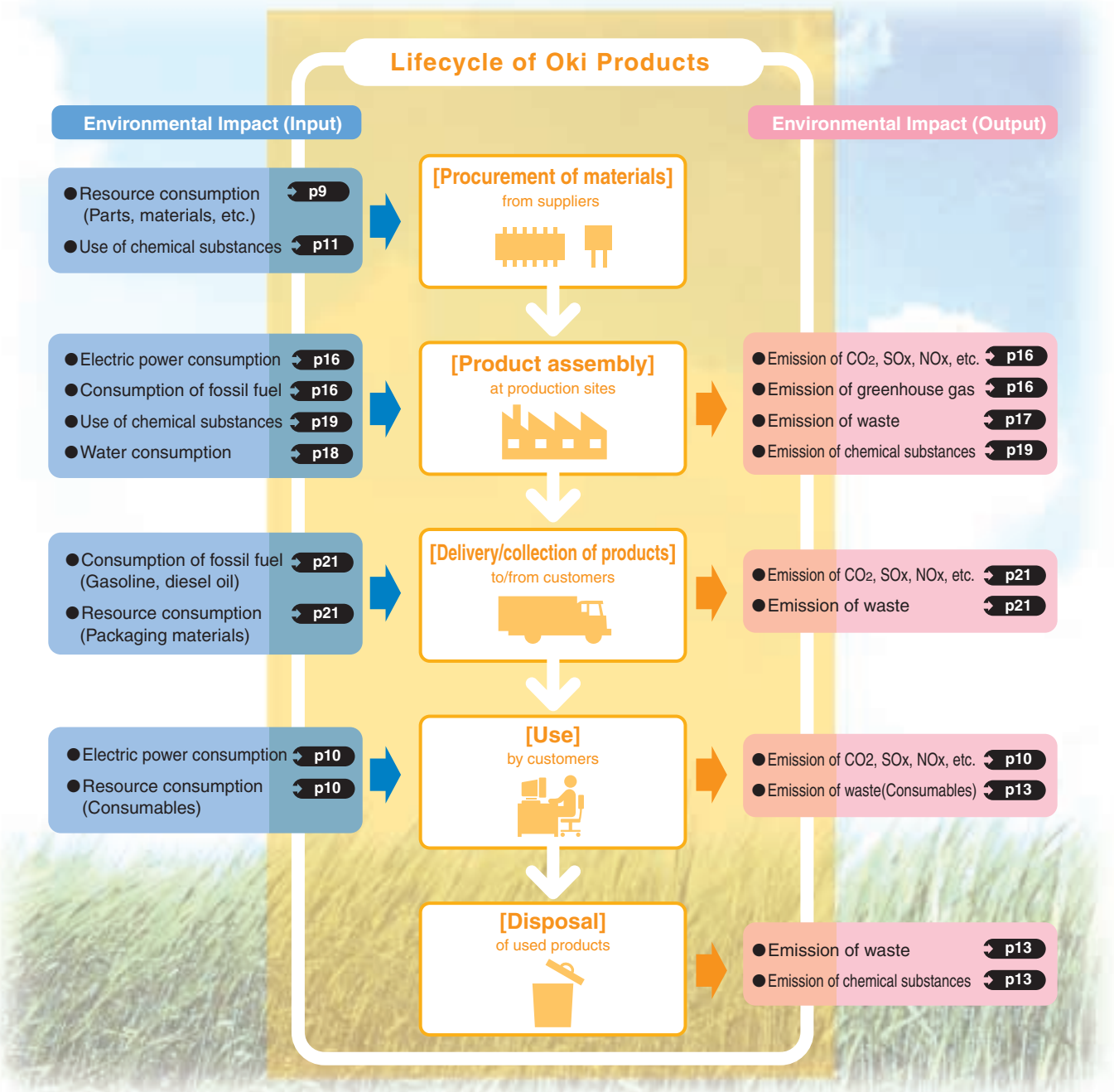
- (1) To provide environmentally friendly products by evaluating, at the development and design stage, the environmental effects of all stages from development to disposal of a product.
- (2) To save resources, conserve energy, and decrease waste by using environment-related technologies in and outside Oki.
- (3) To reduce environmental impact by voluntarily deciding on improvement activity plans in addition to adhering to the environmental regulations of national and local governments.
- (4) To continuously improve the environmental management system and achievements by properly maintaining the PDCA (Plan, Do, Check and Action) of the system.
- (5) To develop environmental protection activities for the Oki group including affiliated companies in and outside Japan.

Environmental Impact and Environmental Activities of Oki Electric

Factors that have an adverse effect on the environment are called “environmental impact”. For example, the environmental impact of “carbon dioxide emissions” adversely affects the environment in that it accelerates “global warming”. Environmental activities reduce environmental impact, and for this, we need to understand the environmental impact of our company.

The illustration below shows the lifecycle of Oki products, and the environmental impact in each stage of this lifecycle. Oki group actively aims for the reduction of environmental impact throughout the total lifecycle of our products.

(For more information on the efforts to reduce environmental impact, please refer to the page shown after the arrow)



Reference: Environmental impact and effect on the environment

Environmental impact		Effect on the environment
Input	Resource consumption	Depletion of resources
	Electric power consumption	Global warming, acid rain, air pollution, resource depletion of resources
	Consumption of fossil fuel	Depletion of resources
	Use of chemical substances	Depletion of resources
Output	Emission of CO ₂ , SO _x , NO _x , etc.	Global warming, acid rain, air pollution
	Emission of greenhouse gas	Global warming
	Emission of waste	Overloading waste disposal sites, contamination of the environment
	Emission of chemical substances	Contamination of the environment

Environmental Protection Activity Program (Oki Eco Plan 21)

“Oki Eco Plan 21” and the results of activities in 2002

In order to decrease environmental impact, Oki Electric established the “Oki Eco Plan 21” (2002 version) in 2002 as its environmental protection activity program. This has been the foundation of all related activities. In 2003 Oki will establish its 2003 version based on the results of 2002.

Oki Eco Plan 21 (2002 version)

Category	Activity item	Target	2002		Page
			Target	Result	
Environmental impact decrease in production activities	Reduction of CO2 emissions due to energy consumption	● Reduce CO2 emissions (basic unit) by 40% of the total for 1990 by the end of 2010 in information/telecommunications sector.	● Reduce by 1% or more from the total for 2001.	10.5% increase	16
		● Reduce CO2 emissions (basic unit) by 20% of the total for 1990 by the end of 2010 in electronic device sector.	● Reduce by 10% or more from the total for 2001.	8% reduction	
	Reduction of greenhouse gas	● Reduce PFC gas by 10% of the total for 1995 by the end of 2010.	● Promote decrease by change of gases and control of the amount.	23% reduction from the total for 1995	16
		Reduction of waste	● Achieve zero emission for nine major production sites by the end of 2004.	● Seven production sites achieved zero emissions.	All (nine) production sites achieved.
	● Reduce final processing amount by 70% (98 tons or less) of the total for 2000 at major production sites by the end of 2004.		● Achieve final processing amount of 163 tons or less.	77 tons (Final target achieved)	
Reduction of environment impacting substances	● Reduce environment impacting chemical substances by 5% of the total for 2001 by the end of 2005.	● Reduce HCFE handled at semiconductor plants by 0.7 tons of the total for 2001.	0.4 tons decrease	19	
Environmental impact decrease through products	Promotion of eco products	● Aim to satisfy the OKI Eco Product Registration Criteria for all products developed in 2002 onward (excluding electronic devices).	● Achieve 40 billion sales of OKI Eco Products.	Achieved 43.9 billion.	10
	Expansion of LCA	● Expand application of LCA.	● Introduce LCA in production processes.	Assessed effects by LCA on development and production processes.	15
	Expansion of green procurement	● Achieve green procurement rate of 90% by the end of 2005.	● Publish Green Procurement Standard.	Published Green Procurement Standard.	11
	Elimination of lead-containing solders	● Eliminate lead-containing solders for domestic production by the end of 2003.	● Achieve lead-free solder rate of 50% or more for newly developed products.	Achieved 52%.	19
	Recycling of used products	● Achieve 85% resource recovery rate* by the end of 2005 (nationwide)	● Achieve 85% or more resource recovery rate in Kanto Region	Achieved 88.2%.	13
Others	Expansion of ISO14001-certified sites	● Acquire certification for main non-production sites by the end of 2003.	● Acquire for one or more non-production sites	Will acquire by the end of September.	7
		● Promote acquisition of certification for overseas production sites.	● Acquire for one or more overseas production sites	Will acquire by the end of September.	
	Enhancement of environmental education	● Enlighten awareness of the environment for entire Oki group	● Expand education for non-production divisions.	Conducted environmental educations	8

* Resource recovery rate: Material recycling rate and reuse rate for collected used products in terms of weight

Environmental Accounting

To pursue environmental conservation activities in an effective and efficient manner, Oki Electric has been conducting environmental accounting since 1999.

1 Fiscal 2002 Environmental Accounting Records

In fiscal 2002, two companies were added to the consolidated group in Japan, and all 22 companies (32 sites) including Oki Electric and overseas affiliates completed the implementation of the system. The results of the 2002 environmental accounting are presented below.

- Environmental protection costs amounted to JY100 million in investments and JY2.83 billion in expenses.
- Environmental protection effects included a 75% reduction compared to 2001 in the quantity of finally processed wastes through the expansion of sites that conduct zero-emission activities. CO₂ emissions remained almost unchanged, being reduced by 0.8% of those for the previous year.
- The substantial effect within the economic effects achieved with environmental protection measures was JY700 million.

■ Environmental Protection Costs

□ Investment: JY100 million (Previous year: 330 million)

(Unit: JY million)

Category	Breakdown (main items)	Investment amount
Operational investments	Investments to prevent pollution (additional wastewater treatment facilities and equipment to treat exhaust gases)	30
	Investments for global environment conservation (low-power air conditioners, electric load control equipment)	30
	Investments for resource recycling (equipment to recover industrial water, to recycle used solder)	20
R&D investments	Investments to control environmental impacts in production phase (development of lead-free soldering technology)	20

□ Expenses: JY2.83 billion (Previous year: 3.19 billion)

(Unit: JY million)

Category	Breakdown (main items)	Investment amount
Operational costs	Maintenance and depreciation costs for environment-related facilities	1940
Pre and post operational costs	Costs for green purchasing and collection/recycling of used products	210
Management activity costs	Environmental management/operation costs, environmental report preparation cost	570
R&D costs	Costs for research and development for reducing environmental impact of products and production processes	100
Social and community activity costs	Environmental improvement costs for greening and community activities	2
Other costs	Money transfers to reserves to respond to environmental damages	10

■ Effects Concerning Environmental Protection Measures

□ Environmental protection effects

Environmental impact index	Breakdown (main items)	Impact (total)	Difference from previous year
CO₂ emissions (1,000 tons-CO₂)	Reduction of energy consumption	297	Reduced by 2.4
Final waste processing (tons)	Reduction of waste disposal	77	Reduced by 231

□ Substantial effect of costs achieved with environmental protection measures: JY700 million (Previous year: 1,040 million)

(Unit: JY million)

Cost reduction effect	Breakdown (main items)	Amount of effect	
Category	Effect from energy and resource conservation	Reduction of consumption of electric power/heavy oil/paper in operation activities	540
	Effect from reduction of processing costs	Reduction of wastes through recycling in operation activities	30
Direct income effect		Sale of valuables from industrial wastes in operation activities	120
		Sale of valuables from end-of-life products	10

⟨Accounting period⟩ April 1, 2002 - March 31, 2003

⟨Accounting conditions⟩ (1) Starting this year, the calculation standards changed to being based on the "Environmental Accounting Guidelines (2002 Edition)", published by the Ministry of the Environment.

(2) A portion of the accounting includes figures relating to affiliated companies located within sites that participated in the environmental impact management.

(3) In the case of costs where environmental protection costs overlap with other costs, only the portion of the costs related to environmental protection is counted.

(4) The depreciation cost of investments is calculated using the fixed installment method for a period of three years.

The substantial effects achieved with these investments are calculated for three years, in line with the depreciation period.

(5) Personnel costs are calculated by prorating the personnel costs for the total time spent on environmental conservation activities.

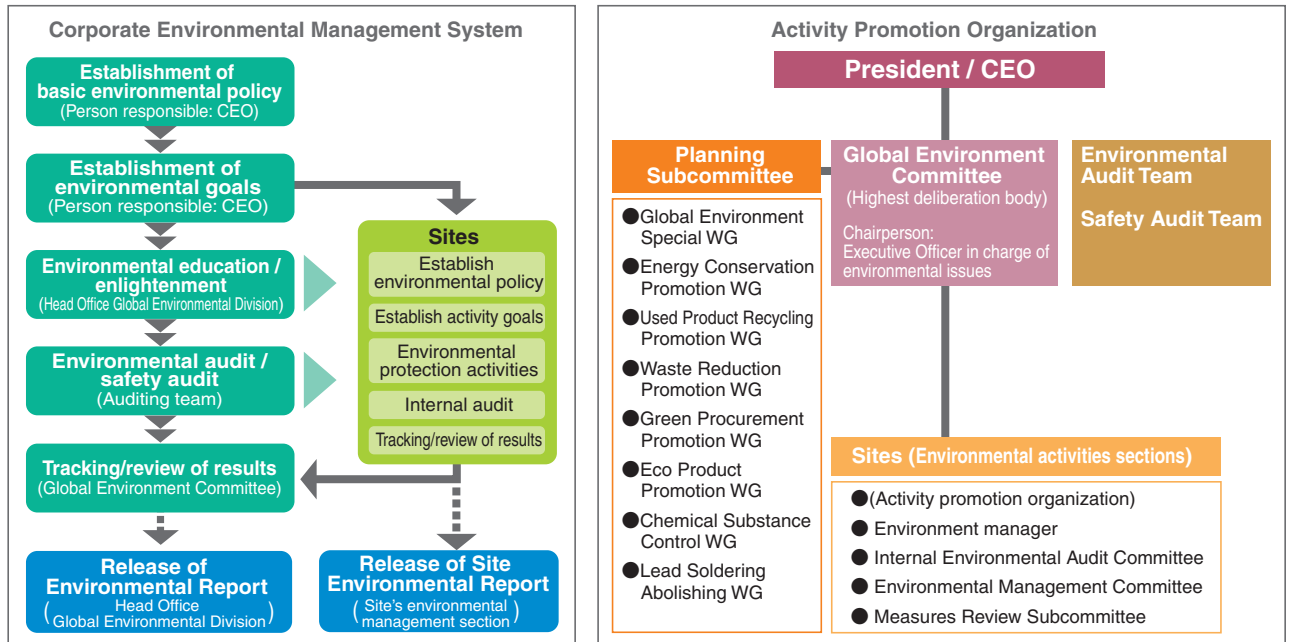
(6) The environmental protection effect sums up the environmental impact reductions of production activities.

Environmental Management System

The Environmental Management System is the main pillar of Oki's environmental activities. To pursue our environment protection activities, we built an Environmental Management System that covers the whole Oki group.

1 Environmental Management System Overview

Our corporate policy and activity goals are determined by the activity promotion organization and then expanded to each individual site. Based on this, the sites establish their own policy/goals for their environmental conservation activities. The process is checked in internal environmental audits conducted by the sites themselves, and also in headquarter audits. Last, we track and review the results of the activities at each site, and reflect these in the corporate goals for the next year.



2 Promotion of Acquisition of ISO14001 Certification

To build Environmental Management Systems at each site, we promote the obtainment of ISO14001 certification. By the end of 2001, all production sites were certified, and presently, our software and service sites are preparing to obtain certification.

ISO14001-certified sites

	District / Company	Location	Date of acquisition
Oki Electric	Hachioji District	Hachioji-shi, Tokyo	07 / 1997
	Takasaki District	Takasaki-shi, Gunma	11 / 1997
	Tomioka District	Tomioka-shi, Gunma	12 / 1997
	Honjo District	Honjo-shi, Saitama	02 / 1998
	Numazu District	Numazu-shi, Shizuoka	03 / 1998
	Shibaura/Makuhari District	Minato-ku, Tokyo/Mihama-ku, Chiba	03 / 1998
Group Companies (domestic)	Miyazaki Oki Electric	Kiyotake-cho, Miyazaki-gun, Miyazaki	02 / 1997
	Nagano Oki Electric	Komoro-shi, Nagano	02 / 1998
	Oki Environment Technologies	Hachioji-shi, Tokyo	07 / 1997
	Miyagi Oki Electric	Ohira-mura, Kurokawa-gun, Miyagi	03 / 1998
	Oki Data Corporation(Fukushima Plant)	Fukushima-shi, Fukushima	03 / 1998
	Shizuoka Oki Electric	Numazu-shi, Shizuoka	03 / 1998
	Tama Oki Electric	Hachioji-shi, Tokyo	07 / 1998
	Oki Printed Circuits	Joetsu-shi, Niigata	12 / 1998
	Oki Communication Systems	Tokorozawa-shi, Saitama	05 / 2001
	Oki Power Tech	Fukushima-shi, Fukushima	01 / 2002
	Oki Micro Engineering	Fukushima-shi, Fukushima	02 / 2002
	Oki Erfolg	Fukushima-shi, Fukushima	02 / 2002
	Oki Sensor Device	Hachioji-shi, Tokyo	03 / 2002
	Group Companies (overseas)	Oki (UK) Ltd.	United Kingdom
Oki (Thailand) Co., Ltd.		Thailand	07 / 1998
Oki Data Manufacturing		Thailand	07 / 1998
Changzhou OKI-GEG Telecoms Ltd.		China	10 / 2001

Environmental Management System

3 Implementation of Environmental Audits

Environmental audits at Oki group include internal environmental audits conducted at ISO14001-certified sites, as well as the “corporate environmental audit”, where headquarters sections in charge audit the sites. The results from the corporate environmental audit in 2002 were as follows.

■ Overview and results of 2002 corporate environmental audit

- (1) Audited sites: Four sites of Oki Electric in Japan (Takasaki, Honjo/Tomioka, Hachioji, Tokyo/Makuhari)
- (2) Aspects and results of the audit

Audit Aspects	Audit results
Improvement of the ISO14001 Environmental Management System (Audit for standards compliance)	●The Environmental Management System has been improved.
Risk circumvention (Audits on compliance with laws/regulations, and on response to emergency situations)	●No violations of applicable laws. ●The construction of a system to incorporate information on revisions of laws without fail is an issue.
Status of “Eco Plan 21” goal achievement (Environmental performance audit)	●Goals are nearly achieved. ●The acceleration of the reduction of environmental impact of products is an issue.
Improvement of internal audits (Audit of internal audit)	●Continuous step up of the skill of the auditors is necessary.

4 Environmental Education / Enlightenment

We are promoting environmental education and enlightenment activities towards all employees in order to deepen their understanding of environmental conservation.

■ Introduction of an “Oki Month of the Environment”

The Ministry of the Environment has established the month of June as the “Month of the Environment”. Oki has held an “Oki Month of the Environment” accordingly. A “Month of the Environment” has been held in some of the sites before, but in 2002 we started this as an activity of the whole Oki group.

During the Month of the Environment, we enlightened our employees by broadcasting a message from the president, putting up posters, and showing the activity results in internal newsletters.

At the occasion of the Month, the individual sites conducted energy conservation and/or cleaning activities in their regions.

■ Education for sales and SE divisions

Sales and SE divisions are workplaces where only little environmental impact is generated. However, to deepen the employees' interest in the environment, the headquarters environmental management division held an environmental seminar for them. The seminar was attended by 70 employees, and the questionnaire filled in by the attendees after the lecture showed opinions like “I would like to know about examples at other companies,” or “I would like to know more about green procurement.”

■ Environmental education/enlightenment activities at sites

●At three sites related to semiconductors - Oki Electric's Hachioji District, Miyazaki Oki Electric and Miyagi Oki Electric - we held an environmental seminar for managers. The lecture was about “Oki's Environmental Protection Measures” (by the headquarters environmental management division) and about “Environmental Activities at the Site” (by the manager of the site)

●In Oki Data Corporation's Fukushima District, we invited an external lecturer for an environmental seminar under the theme “The earth today.” Giving the depletion of the ozone layer, the problem of global warming, the garbage problem, and other problems close at hand as examples, the lecturer explained to us what we can do about this in detail. 206 employees attended the seminar. We further invited proposals for an environmental slogan, and put up the winning proposal in our environmental poster for 2002.

■ Expansion of green procurement

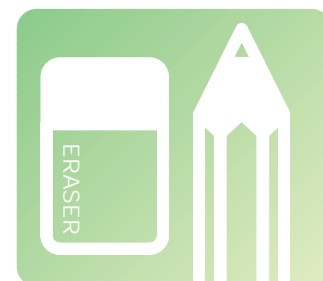
For the green procurement of office consumables, the divisions had been determining their own purchasing standards. To expand green procurement and to increase its efficiency, we unified the purchasing system for office consumables in our 55 group companies and each site in October 2002, and narrowed down the menu of 15,000 articles to 1,500 articles that conform to Oki's Green Procurement Standard (except for consumables used for special equipment). As a result, we achieved 100% green procurement of office consumables and were able to streamline the green procurement procedure. In the future, we will broaden the scope of the unified purchasing system to chairs, lights, lockers and other furniture/utensils, and move for even further green purchasing and cost cutting.



Environment Poster



Environmental Education for the Sales and SE Divisions



The dimension of the environmental impact of a product is often determined during the design phase. To provide products with little impact on the environment, we need to evaluate the environmental impact throughout the lifecycle of a product, such as their energy/resource saving capability, recyclability, or whether it contains hazardous substances, in order to improve the product as much as possible.

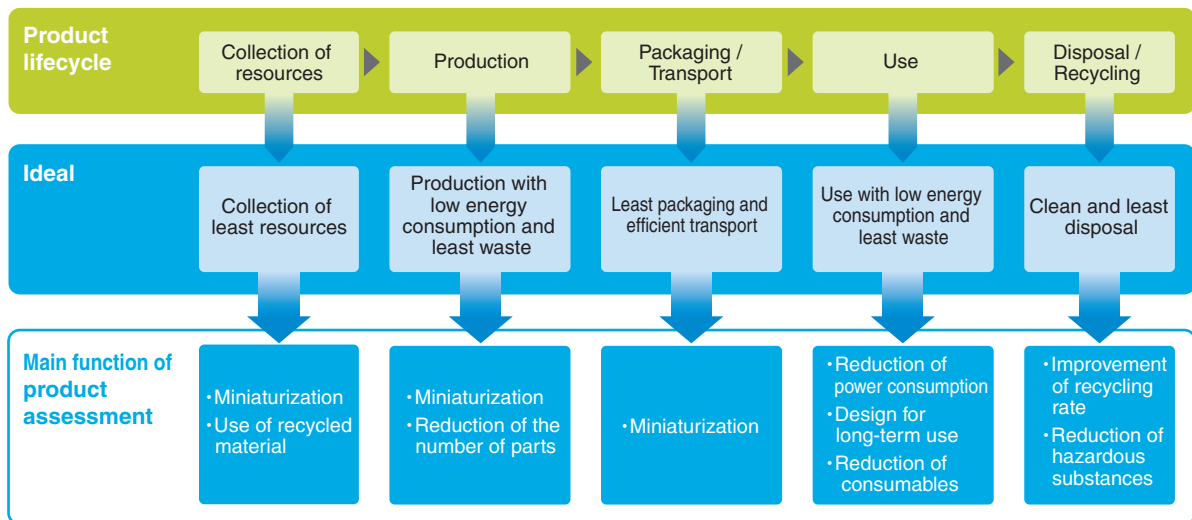
The Oki group is striving to reduce environmental impact throughout the lifecycle of our products by implementing product assessment or LCA, or by operating the “Oki Eco Product Certification Program.”

1 Operation of Product Assessment

Product assessment is a system to reduce the environmental impact of a product by comparing a designed model with a reference model with respect to specified evaluation items (for example, resource conservation, electric power consumption, or recyclability), and repeating the design process until the designed model clears the criteria. The following illustration shows a summary of what has to be considered in product assessment.

The Oki group has been conducting product assessment since the introduction of the product assessment system in 1995.

Points to be considered in product assessment



Utilization of product assessment

The following shows product assessment in concrete detail, using the example of LED printers manufactured and sold by Oki Data Corporation.

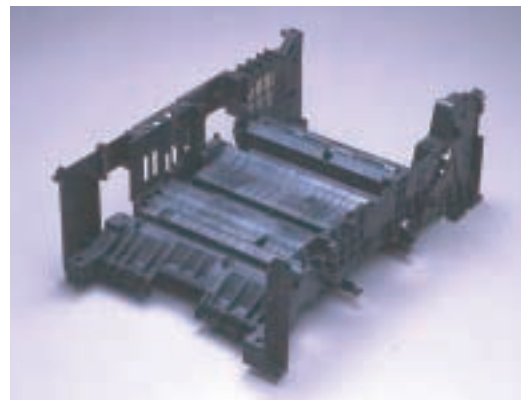
◆ Miniaturization

Miniaturization of a product helps to reduce resources consumed and the quantity of waste. It further reduces energy consumption by improving transport efficiency, and shortening the assembling time.

Page printers used at offices exist in two types: “laser printers”, which use laser beams as the light source, and “LED printers”, which use light-emitting diodes. Compared to laser printers, LED printers have a simpler structure with no moving part, which is suitable for miniaturization. Oki Data is employing the LED method for its page printers to promote miniaturization.

◆ Reduction of the number of parts

Decreasing the number of parts used in a product reduces energy consumption by shortening the time for assembly. Another effect is that it reduces waste, because of less packaging materials used for the parts. As an effort to reduce the number of parts, we are, for example, integrating multiple molded components into one.



Integrated Molded Component

■ Reduction of power consumption

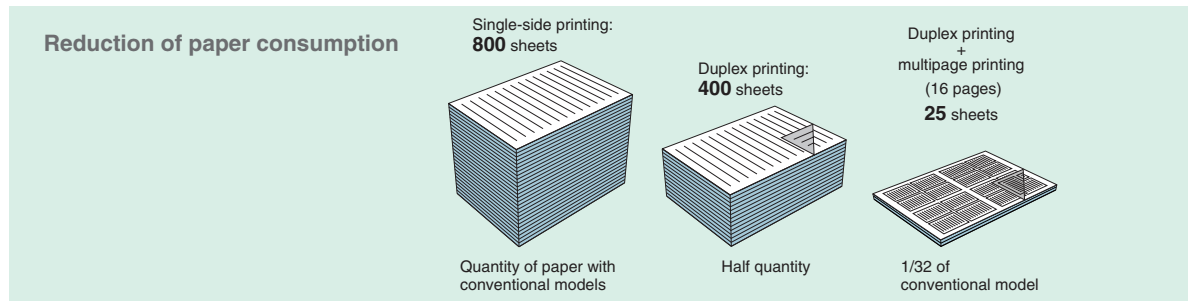
According to the results from the LCA (life cycle assessment) of printers, 60% of the CO₂ throughout the lifecycle is emitted during the use in households or offices. The majority of CO₂ generated is caused by electric power consumption, so that the reduction of power consumption has a significant effect on the reduction of environmental impact. The part that consumes most power in a page printer is the toner fixer, which is heated to a high temperature to melt the toner. The electric power consumption can be improved by lowering this temperature. To solve this problem, we developed "micro-capsule toner," which consists of two layers - a shell layer that softens at high temperatures, and a core layer that softens at low temperatures. This has enabled the toner to melt at low temperatures, realizing fixing at low temperatures. We have further realized power saving by improving the design of control circuits, which contributes to the power consumption during standby.

Standby power consumption of printers (monochrome printers with A4 size output)

Model	Printing speed	Standby power consumption	Power consumption/PPM	Launched in
MICROLINE 701N3	18PPM	25.9W	1.44W/PPM	1999
MICROLINE 14N	14PPM	8.5W	0.61W/PPM	2000
MICROLINE 18N	18PPM	8.0W	0.44W/PPM	2002

◆ Reduction of consumables (print paper)

We cut the quantity of paper in half by giving the printers a duplex printing function. By reducing the size of multiple pages so that they can be printed on one, users can now reduce the quantity of paper to 1/32 to the maximum in comparison with single-side printing if they use this feature in combination with duplex printing. (New color printer models launched in 2002)



◆ Improvement of recycling rate of used products

To improve the recycling rate of used products, we need to disassemble the products up to the individual materials as far as possible. We basically have to avoid anything that hinders disassembly - such as plating, coating, affixing labels, or inserting screws - in the design stage.

2 Operation of Oki Eco Product Certification Program

To provide customers with eco-friendly products, Oki is operating the Oki Eco Product Certification Program. This program internally certifies products that satisfy Oki's original environment standards as "Oki Eco Products", and provides the customer with environmental information on the product. Certified products bear a symbol mark in catalogs or user's manuals, and are published on our website together with the certification standards.

Number of Eco Product certified models (as of March 31, 2003)

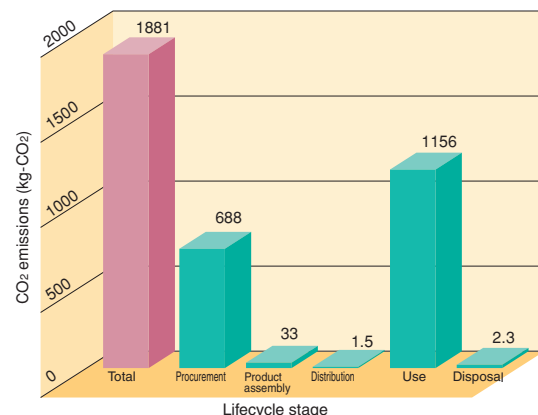
OA equipment	9
Telecommunications equipment	10
Financial equipment	3

3 Promotion of LCA (life cycle assessment)

Product assessment is an easy evaluation method employed by a large number of companies.

However, with this method, it is impossible to analyze in what stage of its lifecycle a product has its largest environmental impact. For this reason, product assessment has the problem that effective countermeasures are difficult to find. As an evaluation method that solves this problem, we are promoting the implementation of LCA. Up to now, we have been conducting trials with LCA for ATM (automated teller machines), printers and telecommunications equipment. The results are utilized in product design.

Printer LCA Results



Although chemical substances are indispensable for our daily life, they can have a grave effect on the environment if they are not used and controlled in an adequate way. Oki group is well aware of this effect and therefore striving to control and reduce chemical substances.

1 Chemical Substance Control

We designate chemical substances in products that have a grave effect on the environment and control them by classifying them into three types: prohibited substances, restricted substances and voluntarily controlled substances.

Control criteria for chemical substances

Classification	Number of substances	Designation criteria
Prohibited substance	97	<ul style="list-style-type: none"> • Substances prohibited for production by laws or regulations • Substances requiring production licenses by laws or regulations • Voluntarily prohibited substances
Restricted substance	94	<ul style="list-style-type: none"> • Substances for which a reduction (schedule for production prohibition, etc.) has already been decided by laws or regulations • Voluntarily restricted substances
Voluntarily controlled substance	101	<ul style="list-style-type: none"> • All substances not included in "prohibited substances" or "restricted substances"

2 Reduction of Chemical Substances in Purchased Articles (Promotion of Green Procurement)

We are purchasing the majority of materials and parts that we use for our products. For these, we put an emphasis on green procurement, preferring materials/parts containing very small quantity of chemical substances that affect the environment.

■ Publication of Green Procurement Standard

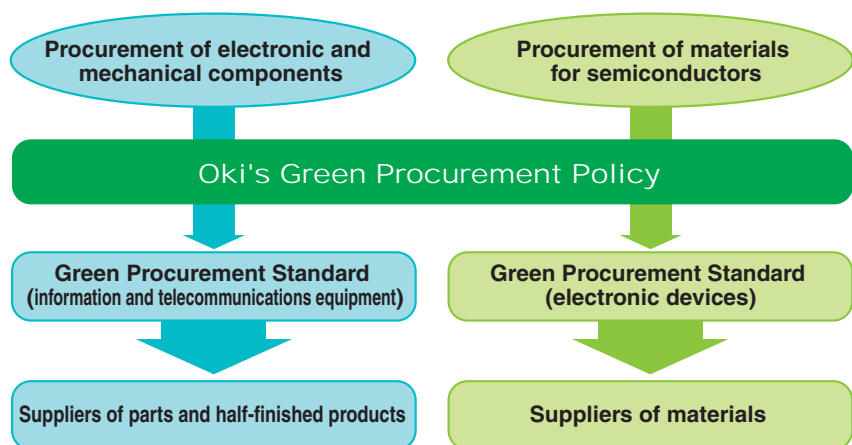
In April 2002, the Conference on the Standardization of Green Procurement of the Japan Electronics and Information Technology Industries Association (JEITA) created "Green Procurement Standardization Guidelines" and started trials of so-called "green procurement surveys" —surveys on chemical substances contained in products. Oki used this occasion to also formulate and publish a new Green Procurement Standard.

The new Green Procurement Standard contains two documents: one for electronic and mechanical components purchased by information and telecommunications equipment divisions, and the other for materials purchased by the semiconductor manufacturing divisions.

These documents are published on our website.



Green Procurement Standard



■ Reduction of chemical substances through operation of "hazardous substance management system"

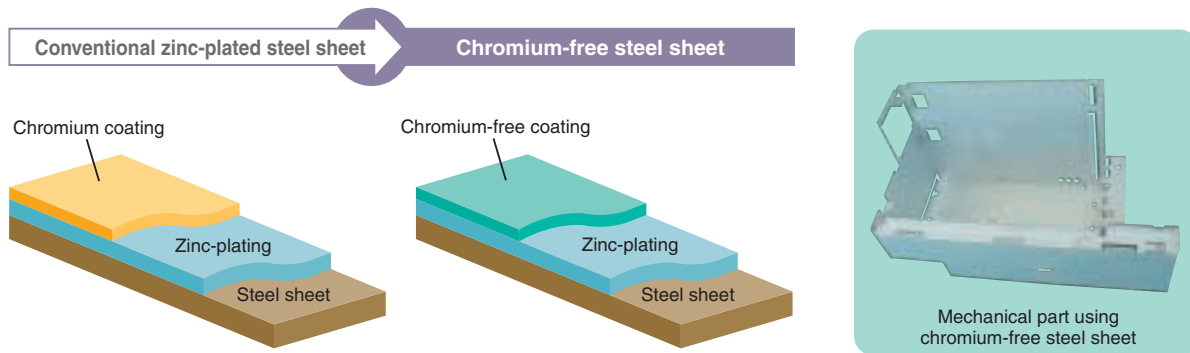
To reduce environment impacting chemical substances contained in parts and materials purchased, we operate a "hazardous substance management system" (internally known as "COSMOS"). The data collected in the green procurement surveys are stored in this system, and the designers in each site select eco-friendly parts and materials based on this information. The COSMOS database is upgraded every year, with respect to both quality and quantity.

Example for the reduction of chemical substances in purchased articles (use of chromium-free steel sheets)

Steel sheets with zinc plating, which are widely used in automobiles and electric appliances, etc. are also used for Oki's major products —ATM (automated teller machines) and telecommunications equipment. The chromium coating, which improves the antirust performance of these zinc-plated steel sheets, contains a very small quantity of hexavalent chromium, a substance subject to the PRTR (Pollutant Release and Transfer Register) system. For this reason, we made efforts to use steel sheets with chromium-free surface coating.

To employ steel sheets with chromium-free surface coating, we had to solve the issues of maintaining a quality equivalent or superior to the steel sheets used before, and of changing the production process. To select the right material, we evaluated and tested steel sheets with chromium-free surface treatment from steel sheet manufacturers with respect to 18 points, including corrosion resistance, welding properties, coating properties, fingerprint resistance, as well as points related to the production process, possibility of procurement from overseas, and cost. As a result, steel sheets with chromium-free surface treatment from two manufacturers passed the quality standard we defined. We verified that we could guarantee the product quality without changing the production process, and were able to switch over to the new material very soon.

In 2002, we conducted the switchover for 450 tons of plated steel sheet used in our domestic plants. We will further complete the switchover of 800 tons per year used in our overseas plants by the end of March 2005.

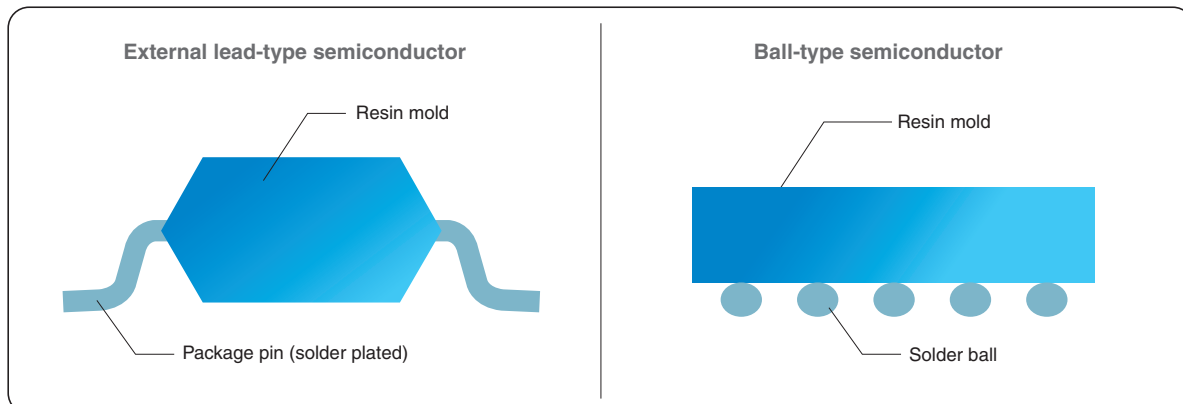


3 Succeeded in the development of a technology for lead-free pin plating for semiconductor packages

One of the goals established in our Eco Plan 21 —our activity plan for environmental protection— is the complete abolition of lead-containing solder, and the whole Oki group is working towards this.

In 2002, we succeeded in the development of a technology for lead-free pin plating for semiconductor packages and installed the facilities at our production sites. We expect that this will reduce the use of lead by 900kg per year.

There are two types of soldering for semiconductor package pins: solder plated pins for external lead-type semiconductors, and solder balls for ball-type semiconductors. During the development of lead-free technology, we kept in mind that we had to keep the quality, reliability and cost at least at the same level as of the ordinary Sn-Pb (tin-lead) solder. The material composition of lead-free solder we selected is Sn-Bi (tin-bismuth) material for external-lead type semiconductors, and Sn-Ag-Cu (tin-silver-copper) material for ball-type semiconductors. These materials have a higher melting point than ordinary solder, and we faced the problem that this affected the heat resistance of semiconductor packages. Despite this, we succeeded in ensuring reliability through measures such as changing to heat-resistant resin. Reliability tests were conducted in accordance with the conditions specified by the lead-free project of JEITA (Japan Electronics and Information Technology Industries Association).



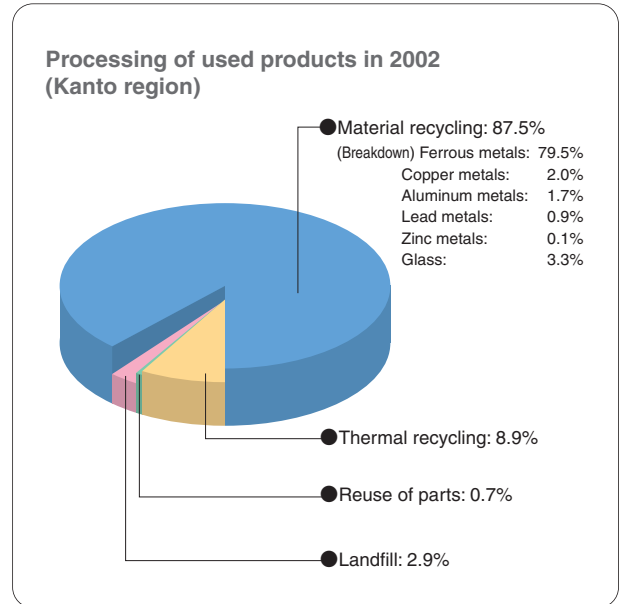
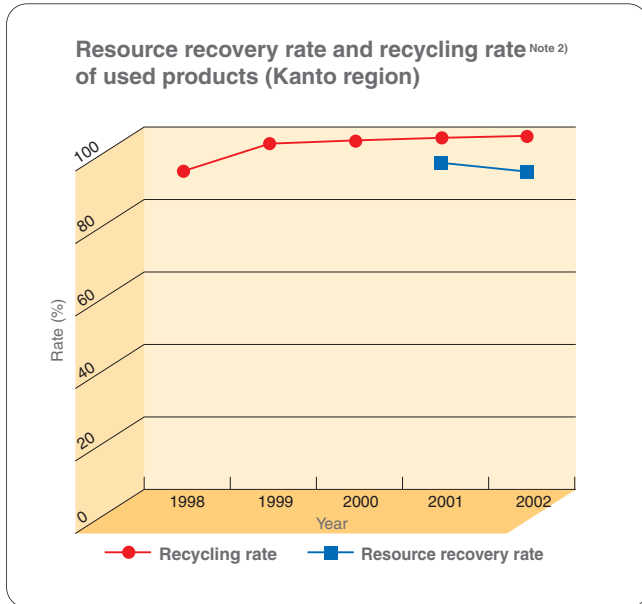
The environmental impact generated during the disposal of used products includes the "emission of waste" and the "emission of environment impacting chemical substances contained in the waste." To reduce this environmental impact, we center our efforts on the improvement of the resource recovery rate ^{Note 1)} of used products.

1 Used Product Recycling Results in 2002

In 2002, we collected 4,154 tons of used products, mainly ATM (automated teller machines). The resource recovery rate in the Kanto region, where a large quantity of used products is collected, reached 88.2%, clearing the goal of 85%.

Note 1) Resource recovery rate: Material recycling rate and reuse rate for collected used products in terms of weight.

Note 2) Material recycling rate, thermal recycling rate and reuse rate for collected used products in terms of weight.



2 Recycling of Used Products

To ensure the proper treatment of used products, and to utilize the know-how for product design, Oki built a "Used-Product Recycling System" in 1999 in the Honjo District, and is operating the system.

There are two methods to disassemble used products: crush them in a short time using heavy equipment and then sort the material, or remove the components by hand and sort them by material. Oki Electric employs the hand-selection method, which ensures a high resource recovery rate and the easy removal of hazardous materials in advance.

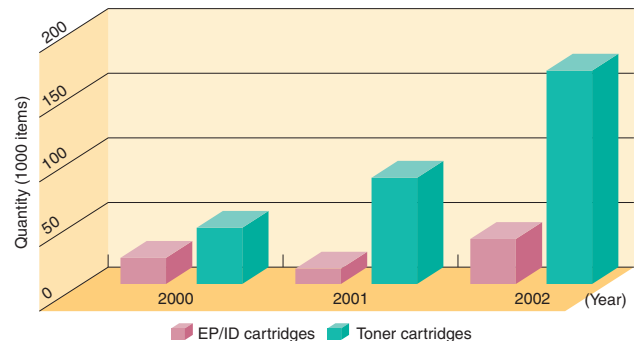
Comparison of the effect by used-product disassembling method

Treatment method	Disassembly using heavy equipment	Disassembly by hand
Resource recovery rate	Low	High
Treatment time	Short	Long
Treatment capacity	Large	Small
Purity of recovered resource	Low	High
Removal of hazardous materials	Difficult	Easy

3 Recycling of Printer Consumables

Oki Data Corporation built and is operating a free collection and recycling system for used printer consumables (EP/ID cartridges, toner cartridges, etc.). The quantities collected increase every year, and in 2002, Oki Data collected 35,000 EP/ID cartridges and 163,000 toner cartridges. Of the collected toner cartridges (monochrome), the company reuses the parts where this is possible. Parts that cannot be reused as consumables or parts of old products are recycled as metal or other material.

Quantity of collected printer consumables



Oki group employs product assessment to ensure eco-friendly product design and production. By offering these products, we contribute to the reduction of environmental impact.

1 Environment Solutions

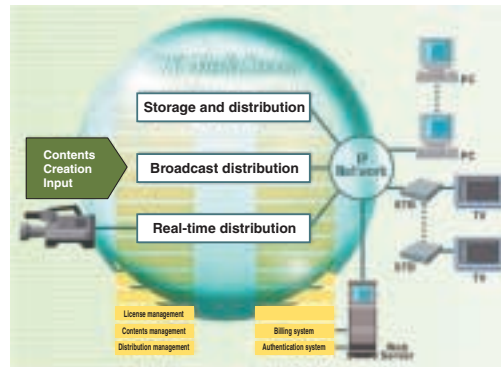
The spread of the Internet and the increased availability of broadband in networks have enabled anyone to collect or provide large volume of information in real time. The progress of these technologies provides us with convenience, and also has the effect that it cuts the resources and energy that we consume, reducing the impact on the environment. Oki is contributing to the reduction of environmental impact by offering "network solutions."

◆Live remote lecture system "LiveOnAir"

"LiveOnAir" is a system that uses real-time live transmissions to realize remote lectures or e-learning. Via a VOD server (Oki Media Server), high-quality images with a low delay are distributed to the lecturer and the students simultaneously. The lecturer can freely control the screen that the students can see, and can proceed with the lecture while showing presentation material to the students. The students, on the other hand, can ask questions in real time by text or voice. All this enables remote lectures with a realistic feeling over the Internet.

Oki Customer Adtech Co., Ltd., which is in charge of maintenance service work, etc. in the Oki group, uses LiveOnAir to connect its head office with the 77 branches nationwide for education and briefings on new products. Before, the 3,000 employees used to assemble in a training center in Shizuoka. This has now become unnecessary, leading to significant savings in energy and time that was used for the travel. We estimate that the reduction in energy corresponds to 990 tons of CO₂ ^{Note)}.

Note) Estimated based on the "Databook of industrial input-output tables for environmental impacts" (National Institute for Environmental Studies)



OKI MediaServer

◆Electronic Document Delivery System

On April 1, 2001, the "IT Document Summary Law" came into force, and the delivery of documents as electronic files using, for example, the Internet became possible. The Electronic Document Delivery System is a system that transmits documents in the form of electronic file to customers, etc. over the Internet. To ensure secure transmissions, it has advanced security functions such as electronic signatures, encryption, or digital watermarks. We expect that the utilization of this system will reduce paper resources and energy for transport.

◆VICS (Vehicle Information and Communication System)

VICS is a system to communicate traffic information and is going to be deployed all over Japan as part of ITS (Intelligent Transport Systems). Through beacons or FM multiplex broadcasting installed on the roadside, drivers are provided with necessary information (such as traffic jams, traffic regulations, routes or parking space) over their on-board equipment (car navigation system). By deploying VICS all over Japan, we expect reductions in traffic jams, exhaust gas and wasted fuel energy. Oki offers communications control equipment for VICS centers and roadside radio beacons.

2 Commercialization of Energy-saving LSIs (SOI Technology)

Oki Electric has been the first in the world to work on developing and commercializing complete depletion type SOI (Silicon on Insulator) technology to realize LSIs with low power consumption. LSIs that have complete depletion type SOI technology implemented consume only one third of the energy of conventional LSIs, and boast revolutionary performance because of their high speed, enabling energy saving also for electronic devices. The Casio Computer's Solar Waveceptor watch, the world's first product that implements SOI technology, enjoys high evaluations. We will continue our development to aim for the commercialization of light-conversion LSIs for optical transceivers, microcomputer LSIs and SRAM (memory LSIs).



An LSI with SOI technology and the Solar Waveceptor watch that uses this LSI (photograph provided by Casio Computer Co., Ltd.)

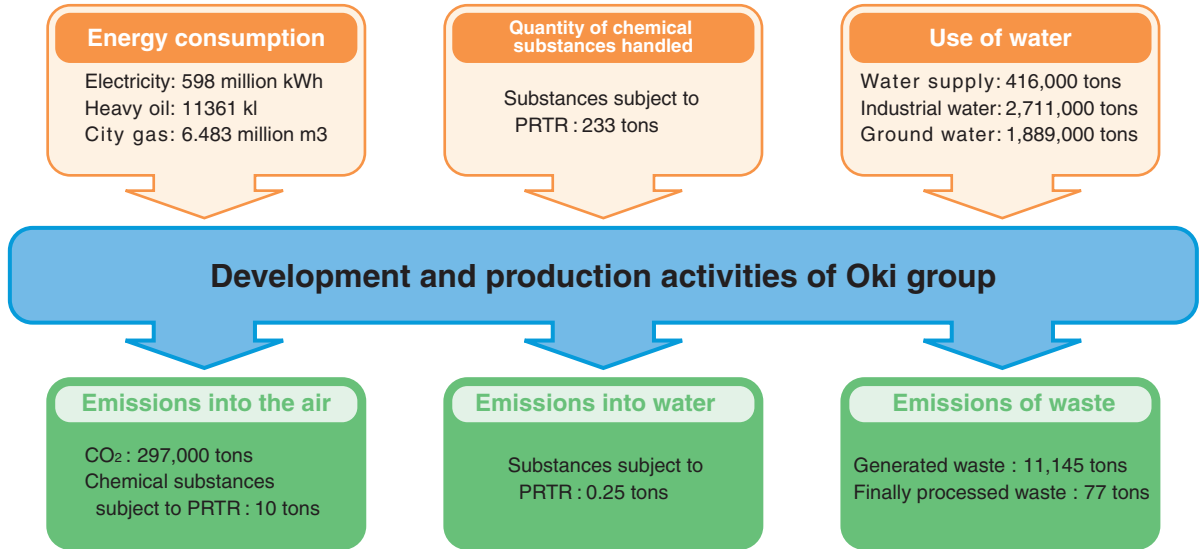


In our everyday activities at the production plants and offices, we consume resources and emit substances that affect the environment. Oki group keeps track of these environmental impacts and implements measures to reduce them. Since 2002, we further assess the effect that such environmental impacts have on the environment, and utilize the results for our environmental activities.

1 Environmental Impact from Development and Production Activities

The environmental impact from development and production activities in 2002 is as follows.

Environmental impact from development and production activities



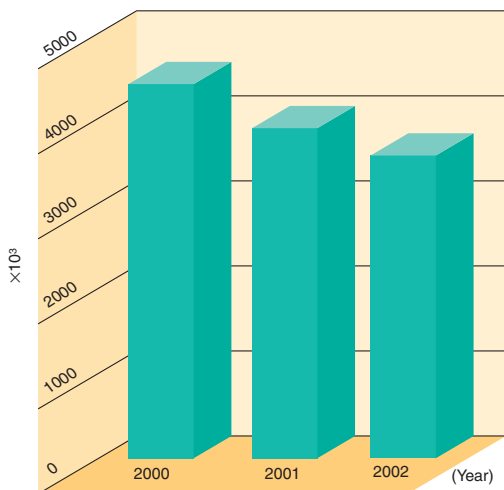
2 Assessment of Impact on the Environment from Development and Production Activities

Based on the environmental impacts that we found out, we evaluated to what degree they affect the environment. For this assessment, we used the Eco Indicator 99,^{Note)} which is one method of integrating LCA to express the degree of the impact in one number (environmental impact indicator).

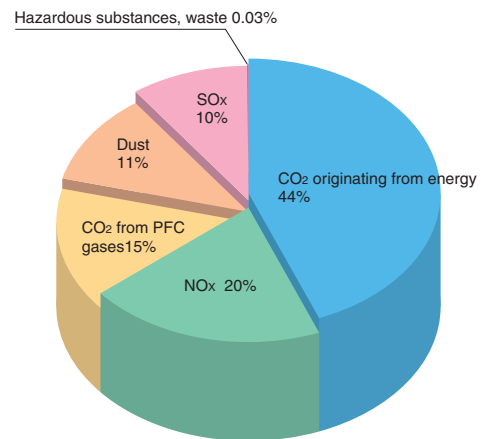
The results of our assessments show that the environmental impact indicator is decreasing every year, and we can say that the improvement of the environment is making progress.

Note) Our assessment included damage to the eco-system and damage to human health for the Eco Indicator 99.

Environmental impact indicator



Environmental impact indicator by type of environmental impact (2002)



The most significant environmental impact from Oki's production plants and offices is the emission of CO₂ and other greenhouse gases.

Because of this reason, we have put up a goal for the reduction of emissions of CO₂ originating from energy —emitted through the consumption of electric power or fossil fuel— and of emissions of PFC gases used in the semiconductor manufacturing process.

1 Record of Greenhouse Gas Reduction in 2002

(1) Emission of CO₂ originating from energy

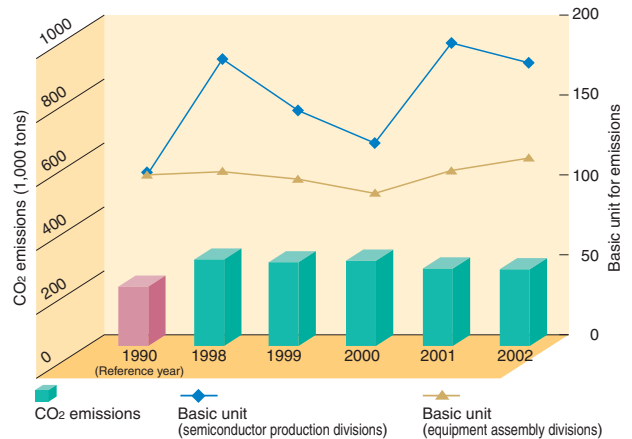
The Oki group (including overseas production plants) emitted 297,000 tons of CO₂ originating from energy, which is a slight reduction of 0.8% (2,400 tons of CO₂) compared to 2001.

As for the CO₂ emissions (basic unit, ^{Note 1)} per division, the semiconductor manufacturing divisions improved their records by 8% compared to 2001 through energy-conservation activities and productivity improvements. The records for the equipment assembly divisions, however, deteriorated by 10.5% due to a decline in sales.

(2) Emission of PFC gases

We took measures such as changing the PFC gases used in the semiconductor manufacturing process to gases with a smaller environmental impact. As a result, we remarkably reduced the global warming potential^[Note 2] by 23% compared to 1995.

Transition of CO₂ emissions (Oki group major production sites)



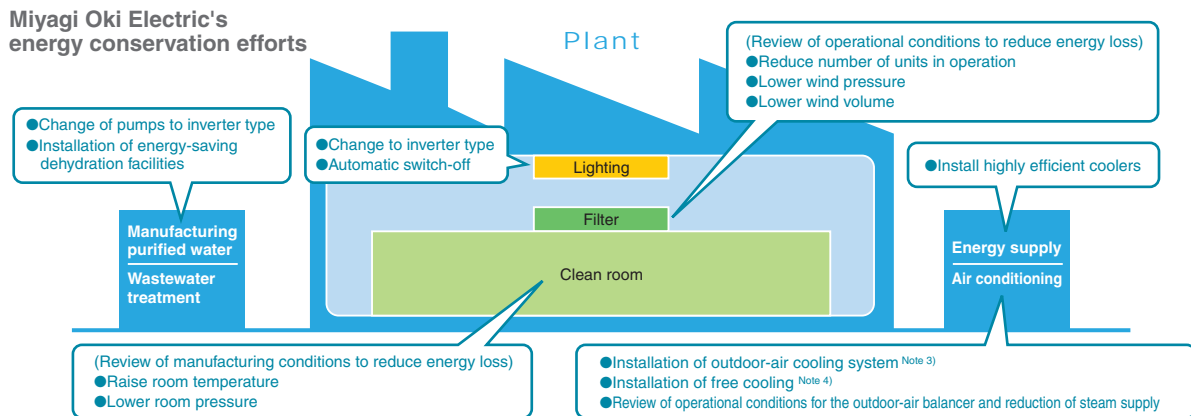
Note 1) Basic unit: CO₂ emissions / net sales

Note 2) Global warming potential: A numerical indicator that converts the impact on global warming into quantity of CO₂

2 Energy Conservation Efforts at Semiconductor plants

90% of Oki's energy is consumed by semiconductor plants. For this reason, our efforts for energy conservation focus on our semiconductor plants.

The illustration below shows energy conservation activities at Miyagi Oki Electric that manufactures semiconductors.



Note 3) Outdoor-air cooling: Cooling the indoor air by using cold outdoor air during winter

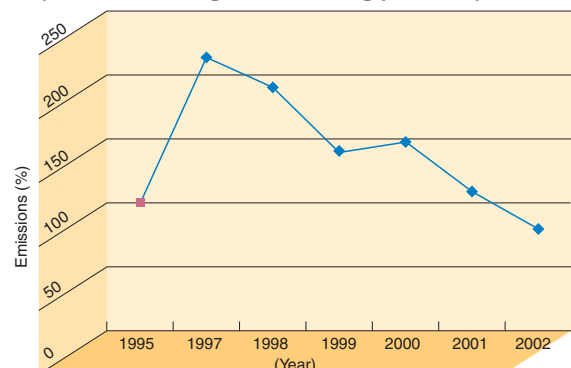
Note 4) Free cooling: Thermal-exchange the water warmed up in the cooling of production facilities with water cooled in the cold outdoor air during winter.

3 Efforts for Reducing Greenhouse Gas (PFC gas) Emissions

In the semiconductor manufacturing process, perfluoro compound (PFC), which has an effect on global warming, is used and partly emitted into the air. Because of this, the World Semiconductor Council (WSC) proclaimed the goal to reduce the emissions by 10% (as converted into global warming potential) by 2010 in comparison with 1995.

The Oki group is working to reduce emissions by changing to gases with a smaller environmental impact, by installing waste gas treatment equipment or by improving processes.

Transition of PFC gas emissions (converted into global warming potential)



The environmental impacts of production plants and offices include the consumption of resources and the emission of waste. To reduce these impacts, the production plants are pursuing zero waste emission activities to minimize the processing of waste in landfills, by promoting the control of waste generation and recycling. Our offices are also actively working on reducing mainly copying paper.

1 Efforts for Waste Reduction and Proper Treatment

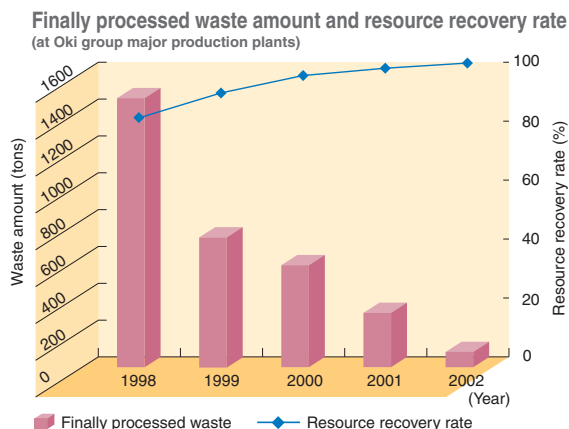
2002 waste reduction results

The quantity of finally processed waste stemming from industrial waste emitted from production plants, and municipal waste emitted from offices, etc. was 77 tons in 2002. This is a 75% reduction compared to 2001. We were further able to improve our resource recovery rate to 99.2%.

Achievement of zero emission at major production sites in Japan

Oki's waste reduction activities have been promoted by the group as a whole since the first establishment of a goal for waste reduction in 1993. In our 2nd Waste Reduction Plan from 1996, the resource recovery rate, which had been at 31% (average for each district) at that time, was improved to 90% (average for each district) in 1999, and since 2000, we have been working for zero emission at our major production sites. With the Waste Reduction Promotion WG at the center of the activities, we aimed to share know-how on common examples-such as the recycling of wastepaper-between the sites, and for issues specific to production plants, such as the treatment of industrial waste, the plants proceeded with individual activities. We achieved our goal two years ahead of the plan.

Note) Zero emission: The Oki group defines this as a resource recovery rate of 99% or more for municipal waste and industrial waste.



Sites achieved zero emission

Year of achievement	District / Company	Location	Operation
2002	Hachioji District	Hachioji-shi, Tokyo	Electronic device development
	Takasaki District	Takasaki-shi, Gunma	Information processing equipment development
	Tomioka District	Tomioka-shi, Gunma	Information terminal equipment production
	Numazu District	Numazu-shi, Shizuoka	Transport systems, acoustic positioning systems development and production
2001	Miyazaki Oki Electric	Kiyotake-cho, Miyazaki-gun, Miyazaki	Semiconductor IC/LSI production
	Nagano Oki Electric	Komoro-shi, Nagano	Electronic device design, production, and manufacturing service
	Honjo District	Honjo-shi, Saitama	Telecommunication and data transmission equipment production
	Miyagi Oki Electric	Ohira-mura, Kurokawa-gun, Miyagi	Semiconductor IC/LSI production
	Oki Data Corporation (Fukushima District)	Fukushima-shi, Fukushima	Printer, fax machine, peripheral development and production

Waste reduction efforts at production plants

Oki's production plants can broadly be divided into two types: "assembly plants" which assemble products, and "semiconductor plants" which manufacture semiconductors. Because the waste emitted from each type is different, each plant pursues its own efforts to reduce waste. Among the waste of the assembly plants, packaging material for purchased parts represents the largest portion of the waste. Relatively strong packaging material such as IC packaging containers are returned to the IC manufacturers in a "reuse system" for repeated use. Semiconductor plants emit large quantity of waste oil, sludge, waste acid and waste alkali. They work to suppress the generation, regenerate for reuse, or recover the resources for this kind of waste.

Examples of recycling of wastes at semiconductor plants

Category of waste	Substance of waste	Recycling application
Oil	Acetone	Reclamation, reuse as fuel
	Ethanol	Reclamation, reuse as fuel
	IPA	Reuse as fuel
Sludge	Developing fluid	Reuse as fuel
	Inorganic sludge	Reuse as cement material
	Organic sludge	Reuse as fertilizer material
Acid	Sulfuric acid	Reclamation
	Phosphoric acid	Reuse as fertilizer material
	Etching fluid	Collection of molten metals
Alkali	Developing fluid	Reuse as auxiliary fuel

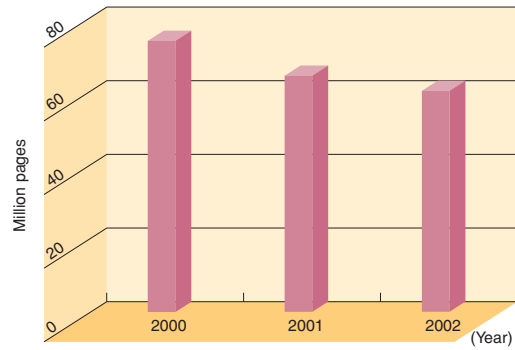
■“Less Paper” activities at offices

The offices (clerical sections) are striving to protect forest resources by green purchasing of office articles, or reducing the use of copying paper. The efforts are in accordance with ISO14001. In particular, they try to reduce the quantity of copying paper, using duplex printing, printing on the back of printed paper as much as they can, or using networks for electronic approvals of documents, or EDI (electronic data interchange) with business partners. As a result, the quantity of paper used was reduced by 8% (5 million pages) in 2002 compared to the previous year. For copying paper, catalogs/pamphlets, business cards, toilet paper, etc. for in-house use, we further conduct green purchasing in the whole Oki group, and use recycled paper with a high content of recycled material.

■Efforts for proper waste treatment

To ensure proper treatment of waste, the headquarter division for environmental management surveyed the manifest management of all 36 operational sites, sales offices, group companies, etc. all over Japan to check its status.

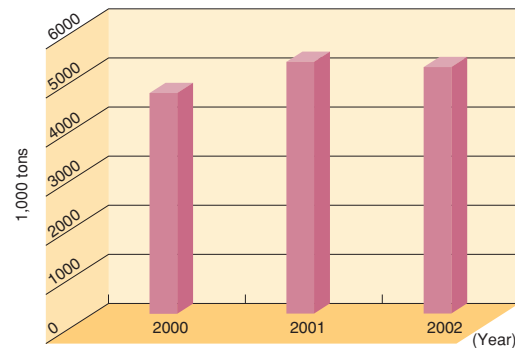
Quantity of copying paper used (converted to A4-size pages)



2 Efficient Use of Water Resources

In 2002, the use of water was at 5.016 million tons, which is a 2.5% decrease from the previous year. To reduce the use of water, we are aggressively promoting the recycling of water within our production plants. Especially the semiconductor manufacturing process uses large quantity of purified water, so that we have been operating purified water recycling systems since the plants were built. The recovery rate of water has reached a level of more than 95%.

Transition of water use



3 Regeneration of Unwanted Personal Items

Oki has recycled personal items that became unnecessary. Through the cooperation of its employees, Oki group is collecting unnecessary personal items to serve society. The following shows some examples.

■Bicycles

We donated 10 unwanted bicycles from our dormitory and company housing in Warabi city, Saitama prefecture to the NGO “AAA” (Asia & Africa Association). They are used at professional training sites in Kenya, Uganda, Sri Lanka, and other countries. The shipping cost was paid from the “Oki 100-Yen Fund of Love.”

■Picture books

We affixed a Laotian translation to Japanese picture books to create Laotian ones.

■Used clothing

We donated used clothing collected at sites of the Oki group all over Japan to refugees in Tanzania, via the NGO “Wakachiai Project.”

■Abacuses

We collected unwanted abacuses and donated them to an elementary school in Thailand via the Shimane International Center. They are used in math lessons.

■Spoiled postcards

Via the “Darunee Fund for Education in Asia” of the Minsai Center Japan, we supported poor children in Thailand and Laos to enter school. 250 postcards make up the funds for one year of education for one child.

■Articles for daily use, etc.

Unwanted soap, towels, stationery and other articles of daily use were donated for bazaars at facilities for the challenged.



Sorting of collected used clothing

One of the environmental impacts in our production activities is the emission of chemical substances. Although chemical substances are indispensable for production activities, they can have a grave effect on the environment if they are not controlled in an adequate way. Oki group is well aware of this effect and therefore working to control and reduce chemical substances.

1 Control of Chemical Substances

Among the chemical substances used at production plants, we identify those with a serious effect on the environment and control them by classifying them into three types: prohibited substances (95 substances), restricted substances (92 substances) and voluntarily controlled substances (389 substances).

2 Efforts for Reducing Chemical Substances at Production Plants

Efforts for the PRTR system

The PRTR (Pollutant Release and Transfer Register) system is one of the methods to track the emission of substances with a grave effect on the environment.

A law concerning the implementation of PRTR was enforced in July 1999, and the first reporting based on this law was started in April 2002.

Ahead of the legislation, we started to work on the PRTR system in 1997, following the guidelines issued by the Electrical and Electronics Industry Association, and have published the details in our environmental reports. In 2002, the emissions of substances subject to the PRTR system were reduced by 48% of the total for 2001.

2002 result of emissions of substances subject to PRTR

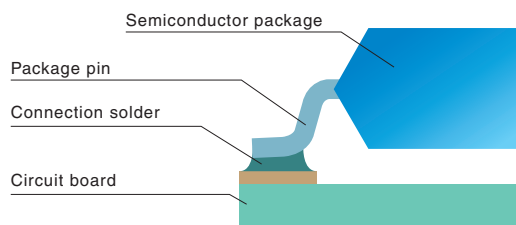
(unit: ton)

Chemical substance	Amount handled	Amount emitted				Amount shifted	
		Into air	Into water	Into soil	Total	To sewer	Out of site
Hydrogen fluoride and its water-soluble salt	145.09	0.02	0.18	0	0.20	0.02	39.33
Xylene	31.73	5.44	0	0	5.44	0	23.31
Formaldehyde	11.67	0.93	0	0	0.93	0	10.67
Nickel compounds	7.61	0	0.07	0	0.07	0	6.29
2-aminoethanol	6.77	0.83	0	0	0.83	0	3.77
Boron and its compounds	6.40	0	0	0	0	0	0.26
1, 1-dichloro-1-fluoroethane	6.05	0	0	0	0	0	0
Lead and its compounds	5.63	0	0	0	0	0	0
Copper water-soluble salt(excluding complex salt)	4.63	0	0	0	0	0	4.58
Toluene	4.25	2.18	0	0	2.18	0	0.52
Acetic acid 2-ethoxyethyl	1.81	0.29	0	0	0.29	0	1.31
N, N-dimethylformamide	1.76	0.32	0	0	0.32	0	1.44
2002 total	233.40	10.01	0.25	0	10.26	0.02	91.48
2001 total	191.57	19.29	0.40	0	19.69	0.02	88.78
2000 total	283.20	27.10	0.63	0	27.73	0.03	92.91

Complete elimination of lead-free solder on printed circuit boards

The surface of semiconductor package pins is plated with solder that contains lead - a substance subject to the PRTR system. In fiscal 2002, Oki Electric succeeded in the development of a technology to make this solder plating lead-free, and installed the equipment of lead-free solder plating in semiconductor manufacturing plants in and outside of Japan. As for eliminating the lead in the solder connecting the circuit board with the semiconductor package pins, we completed the development of the technology, installed the corresponding equipment at our group company Nagano Oki Electric in 2001, and are moving towards mass production.

Printed circuit board



Efforts for reducing chemical substances at semiconductor manufacturing plants

When newly employing a chemical substance, we evaluate its effect on safety, disaster prevention and the environment. Substances that do not pass this evaluation cannot be purchased. We further built a system to know how much of the chemical substances put into the manufacturing process are ultimately emitted in waste gas, wastewater, or waste material. Based on these data, we are promoting activities to reduce their use through improvements of the manufacturing process, to change to substitutes with a lower environmental impact, or to totally eliminate their use.

Environmental risks can be defined as “the probability of environmental effects that we want to avoid by all means.” Apart from engaging in activities to reduce the emission of environmental pollutants, we conduct regular measurements and maintenance of our facilities, training for emergency situations, and aim to reduce environmental risks, to prevent air pollution, water pollution and other environmental pollution in advance. We have further implemented a headquarter safety audit to check and evaluate whether the risk management concerning the environment, disaster prevention, and health and safety is effectively working.

1 Environmental Risk Management

■ Environmental risk management at semiconductor plants

Because semiconductor manufacturing plants use large quantity of chemicals, we implemented the following preventive measures to reduce environmental risks.

Main measures to reduce environmental risks

Cause of disaster	Assumed disaster	Prevention method	Implementation examples
Natural disasters, errors	Environmental pollution caused by malfunction of a facility	Auto-stop	Chemicals supply facilities
	Environmental pollution caused by tilting over or falling down of equipment/articles	Fixing	Facilities and equipment
		Neatness and cleanliness	Restrictions on quantity/height of stored articles
Malfunction of facilities	Environmental pollution caused by malfunction of a facility	Early discovery	Centralized monitoring of alarm facilities Regular maintenance
		Elimination of source	Prohibition of the use of environmental pollutants Elimination of incinerators, underground tanks
		Secondary disaster prevention	Installation of basins on chemical tanks to prevent liquid leakage
General	Environmental pollution in general	Proper response in disasters	Employee education and training

■ Response to soil and ground water problems

The Oki group has already entirely eliminated the use of the organic chlorine compounds 1,1,1-trichloroethane, tetrachloroethylene, trichloroethylene and dichloromethane. To check the impact of these substances used in the past, we investigated soil and ground water contamination at all production sites, including group companies, and are presently continuing to conduct regular measurement.

■ Response to complaints

In 2002, no fines or penalties concerning the environment were imposed on Oki Electric. We did however receive three complaints about noise from the neighborhood, and one complaint about television interference. In any of these three cases, we located the cause and implemented preventive measures.

2 Safety Management

With regards to safety management, each site is pursuing activities after creating an organization and system based on the rules from the headquarters. To check and evaluate whether this organization and system for safety is effectively functioning and properly processed based on relevant laws/regulations, as well as on our internal rules, we have been conducting headquarter safety audits of the production plants (including group companies) since 2001.

■ 2002 results of headquarter safety audits

(1) Audit items (relevant internal rules)

- Environment (Environment Management Rules)
- Disaster prevention (Company-wide Disaster Prevention Rules)
- Health and safety (Health and Safety Management Rules)

(2) Audit aspects

- Management policy and concrete measures regarding safety management
- Safety management system and activities (including the availability of rules)
- Daily management of risk generating factors

(3) Audit results

- Compared to 2001, the number of problems identified per site decreased, and safety was improved.

Year	Number of audited sites (Japan)	Number of audited sites (overseas)	Number of problems identified	Number of problems identified/sites
2002	10	5	43	2.9
2001	21	6	85	3.1

(4) Follow-up

- We reported the results to the Management Conference.
- We confirmed that measures were implemented to solve the identified problems.
- The results will be reflected in the audits for 2003.

The process involving the transport of things is called “distribution.” Distribution includes sales distribution to deliver products to our customers, procurement distribution to carry purchased parts to our production plants, and collection distribution to carry used products from our customers to the disassembly plants. Roughly divided, the environmental impact related to distribution has two forms:

- Environmental impact related to packaging
- Environmental impact related to transport.

Oki Logistics Co., Ltd., which is in charge of distribution for the Oki group companies, is striving to reduce these environmental impacts from distribution.

1 Efforts to Reduce Environmental Impact Related to Packaging

Impacts that packaging has on the environment are, for example, the consumption of resources for the packaging material or the emission of packaging material waste. To reduce these impacts, we are striving to design packaging in consideration of the keywords “reduce, reuse and recycling”, as well as to replace packaging materials with ones that are more eco-friendly.

Promotion of resource-saving packaging

To reduce the quantity of packaging material, we work for resource-saving packaging.

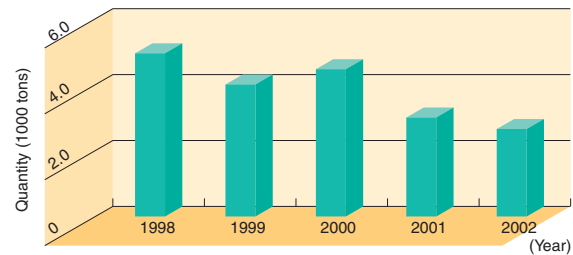
For example, the “simple packaging” for ATM (Automated Teller Machines) is a polyethylene bag to shut out dust. During transport, we affix protective materials to the machines to prevent scratches.

This way, we can maintain a transport quality of the same level as for ATMs packed in corrugated boxes.

Switchover to eco-friendly packaging materials

We are promoting the replacement of expanded polystyrene and other plastic cushioning materials with cushioning materials containing recycled paper, such as corrugated cardboard cushioning material. Compared to plastic cushioning material, shock absorbing material containing recycled paper is inferior in that it lacks elastic force and resilience, or that its hardness changes with ambient humidity. We make up for these drawbacks in the design techniques.

Quantity of purchased packaging materials



Equipment to make cushioning material from used corrugated cardboard

2 Efforts to Reduce Environmental Impact Related to Transport

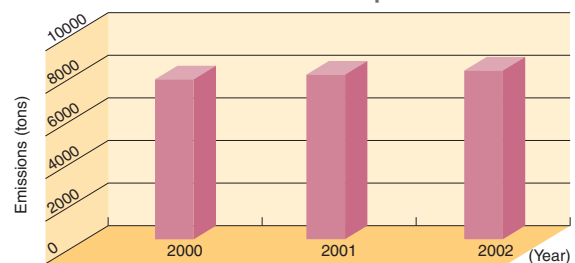
Environmental impacts during transport are, for example, the consumption of fossil fuels such as diesel oil used by trucks, and the emission of CO₂, NO_x or SO_x in the exhaust gas.

As measures to reduce these impacts, we are, for example, switching over to low-pollution alternative fuel (compressed natural gas, etc.), or implementing “eco-driving” by reducing idling. We are further promoting a modal shift to railroads and sea transport, as well as the improvement of loading efficiency and the operation of consolidated cargo delivery services. In addition to this, we engage in the following efforts.

Cooperation with outsourcing partners for transport

Oki Logistics Co., Ltd. is a so-called “non-asset” company, which means that it owns no trucks or warehouses. To reduce the effect on the environment during transport, they need to closely cooperate with their outsourcing partners. For this, they established a “Sectional Committee for the Global Environment” within the “OBC Meeting” that they organized with their outsourcing partners.

CO₂ emissions related to transport ^{Note)}



Reduction of CO₂ emissions through shortening of air transport routes

The distribution center for semiconductor products used to be in Hachioji, Tokyo, and semiconductor products manufactured at overseas plants were collected at this distribution center and shipped to customers inside and outside of Japan after being sorted and packed. With this transport route, semiconductor products had to pass the Hachioji distribution center even in cases where products made in our Thailand plant—the Oki’s overseas manufacturing hub for semiconductors—were sent to overseas sales companies. With the increase of overseas sales, overhead in time and distribution cost, as well as the environmental impact, was growing.

Because of this, Oki established a new distribution center within the overseas plant, and changed the distribution route so that the products are now shipped directly from there to customers all over the world. This shortened the distance for air transports, resulting in a reduction of CO₂ emissions by 500 tons ^{Note)} a year.

Note) Estimated based on the “Databook of industrial input-output tables for environmental impacts” (National Institute for Environmental Studies)

Publication of Environmental Information

It is important for an environmental management system to publish environmental information in a proactive manner, obtain opinions and feedback from people inside and outside of the company, and then improve the system. For this reason, we publish environmental information in various ways.

1 Publication of Environmental Information

To respond to the requests of a variety of people, we publish environmental information using the following means.

Publication means	Source and management division	Frequency	Content	Publication method
Environmental Report	Oki Environmental Management Division	Once a year	Environmental activities within Oki group	Document, Web
Site Environmental Report	Environmental Management Division at each site	Once a year	Environmental activities at sites	Web
Oki Technical Review (Special Edition on the Environment)	Public Relations Division	Once every three years	Environmental technologies	Document, Web
Environment Web	Oki Environmental Management Division	As required	Environmental activities	Web
Social Contribution Web	Social Contribution Office	As required	Social contribution activities	Web

2 Issue of Environmental Report 2002

The “Environmental Report 2002” was released to introduce Oki group's efforts for the protection of the environment to people inside and outside of the company. A Japanese and an English version provide mainly information on the results of our environmental protection activities.

The reports were also published on our website (<http://www.oki.com/en/eco/2002/top.html>).



3 Release of Site Environmental Reports

We published “Site Environmental Reports” on our website (<http://www.oki.com/jp/Home/JIS/Profile/ECO/>). These reports summarize the results of the detailed environmental measures and efforts of eight sites. The reports are intended to introduce environmental impact data compliant with local regulations or unique environmental efforts of each plant, which cannot be included in our corporate environmental report, in detail to the residents of the region or to local communities, to seek their understanding. Up to 2002, the following sites published their reports.

Published from 2001	Published from 2002
◆Hachioji District (Hachioji-shi, Tokyo)	◆Miyazaki Oki Electric (Kiyotake-cho, Miyazaki)
◆Shibaura/Makuhari District (Minato-ku, Tokyo/Mihama-ku, Chiba)	◆Miyagi Oki Electric (Ohira-mura, Miyagi)
◆Takasaki District (Takasaki-shi, Gunma)	◆Oki Data Corporation Fukushima District (Fukushima-shi, Fukushima)
◆Honjo/Tomioka District (Honjo-shi, Saitama/Tomioka-shi, Gunma)	
◆Numazu District (Numazu-shi, Shizuoka)	

4 Acceptance of environment trainees from municipal authorities

At the Hachioji district, we accepted workers from the municipal office in charge of the environment for training. The General Affairs Division, the ISO14001 Secretariat and employees actually involved in environment affairs took charge of the education, and conducted training on the basics of ISO14001 and Oki's environmental conservation activities, as well as health and safety, health control, disaster prevention, customer needs, and other topics.

5 Exhibitions

Oki Data Corporation held an environmental forum titled “Green Forum 2002” in the “Oki Data Pricom 2002”, an exhibition at the Tokyo International Forum. At the forum, a panel discussion was conducted after a keynote on the topic of the global warming problem. We further signed emission55 (a movement proposed by the WWF (World Wide Fund for Nature), and expressed support for the enforcement of the Kyoto Protocol.



Masahiko Kawai, then President of Oki Data Corporation, and Ms. Ayukawa of WWF Japan

Social Contribution Activities

Our employees and the company cooperate in pursuing social contribution activities under Oki's slogan "Let's start with what we can do" for society and for ourselves. The Corporate Social Contribution Promotion Office plays the central role in this.

1 Promotion of "Volunteer Once a Year"

At the occasion of its 120th anniversary, the Oki group promotes "Volunteer Once a Year," where every employee participates in some volunteer activity once a year. The environmental volunteer activities in each district in 2002 were:

■ Participation in the "77th Hometown Beautification Joint Voluntary Service"

The Chubu District (Nagoya city) of the Oki group has formed the volunteer group "Oki Chubu Circle," and conducts cleanup activities as part of their social contribution activities for the region. After the "Making the Horikawa River Clean Again" volunteer activities in the previous year, 47 members participated in the "77th Hometown Beautification Joint Voluntary Service," which was held on Sunday, May 26. The day had fine weather, and under the early summer sun, all participants worked hard, spending a short but productive time. From this year, the circle aims to engage in volunteer activities twice a year.

■ Participation in the "Meeting for the Movement to Beautify the Kiyotake River"

At Miyazaki Oki Electric, 42 employees participated in the "Meeting for the Movement to Beautify the Kiyotake River" held by Miyazaki city on Sunday, June 2.



The "Meeting for the Movement to Beautify the Kiyotake River"

■ Cleanup of commuting routes

The Kofu Plant of Oki Sensor Device Corp. and employees of nine other companies in the same industrial complex together cleaned up commuting routes during lunchtime. Employees of the Yamanashi Plant at the foot of Mount Fuji also used their lunchtime to clean up their commuting route, which leads to Mount Fuji.

■ Continue the "Concerted Cleanup of Chuodori Avenue of Takamatsu City"

Employees of our Shikoku Office participate in the "Concerted Cleanup of Chuodori Avenue of Takamatsu City," which is held by the Takamatsu City Environment Beautification Promotion Council once a month as part of their activities for the community. Since their first participation in August 2001, they have been continuing to participate in this activity every month. On July 4, 2002, 7:40—8:10 a.m., three employees participated in this activity before they went to the office, and cleaned the Chuokoen Park as well as the walkways in the vicinity. It did not rain, but was very hot and humid, so that after the cleanup, everyone was soaked in sweat. Up to then, Oki's participants had not had many chances to talk with local volunteers. This time, however—maybe because the overall number of participants was small—they were able to find plenty of time to talk.

■ Participated in volunteer activities to clean up Katahama Beach.

Starting this year, the six Oki group companies of the Numazu district participated in "Communal Concerted Cleanup Activities" that are conducted in Numazu city once a year. This year's concerted cleanup activity was conducted on July 14, 2002. On that day, a volunteer force of 75, including 8 children, came together from the Oki group. At Katahama Beach, each of them took trash bags they were given, and picked up the trash while sorting it into cans, bottles, plastics, and combustible trash. The chief of the residents' association thanked us, saying "Before, these activities used to cost us a little more than an hour. This year, we were able to finish early thanks to the participation of people from the Oki group."

■ Continuing major cleanup operation in Sendai

On September 7, 2002, 87 people—employees of our Tohoku Office and Oki group companies located in Sendai and their families—took part in cleanup activities in Sendai (normally called "picking up trash") after they had done so in the year before. This year, the weather was rainy, and the streets of Sendai were also full of people because of the Sendai Jazz Festival. We somehow managed to work among all these people. The trash on the main street was mostly cigarette butts, but in the side streets we found many PET bottles and empty cans, and we picked up more trash than we had expected.



Social Contribution Activities

2 Forestry Volunteer Activities

Forests work in various ways. They supply forest resources, secure water resources and prevent landslide disasters. The maintenance of forests has become difficult for reasons such as the aging of the people working in the forestry industry. We promote forest volunteer activities to improve this situation, even if only a little.

■Forest volunteer activities in Naka Izu by the “Oki Cooperative Team for Mountains and Greenery”

On the weekend of October 19-20, 2002, 29 members of the Oki Cooperative Team for Mountains and Greenery participated in the “Naka Izu Town Program”, which was conducted for the second time this year. This program consists of forestry volunteer activities of the Oki group alone and was planned in cooperation with the Green Earth Center. We conducted tree thinning in forests owned by Naka Izu town, under the guidance and with the participation of four people from this center, including our leader Mr. Yamada.

The participants put on their helmets and gloves, took their saws and started their tree-thinning work. The trees were covering the sky, and we cut some of them —mostly two-stem trees or bent trees— to let the sun shine in. The cut trees are cut in 2m intervals and used as thinned wood. “The ground surface of Japan's forests is turning into desert.” The words of Mr. Yamada, a local resident and the general leader of the activity, left a deep impression with us.



Forestry volunteers

■Forest volunteer activities in Uenomura Village by the “Oki Cooperative Team for Mountains and Greenery”

On the weekend of November 16-17, 2002, 18 members of the Oki Cooperative Team for Mountains and Greenery and one worker of the Green Earth Center, as well as three members of the “Cooperative Team for a Green Hometown” jointly conducted the “Uenomura Program.”

Until 30 years ago, forestry was booming in Uenomura village in Gunma prefecture. However, with the increasing imports of wood from overseas, forestry started to decline. Today, there is depopulation, and only a few young people. The number of people working in the forests has shrunk, and the forests are in a bad state. Mr. Nakazawa, a member of the local forestry industry who had been invited to the forestry class, said that “It will have a significant effect in the future that you came to this Uenomura where even young people are not coming any more, and that you even worked as forest volunteers.”

In the Uenomura Program, we cut twigs. Twig cutting is the work of cutting twigs at the bottom half of a tree, to let the trees grow healthily, and to let the sun shine into the forest. After learning on what to be careful about when cutting twigs, we put on our helmets and gloves, took our saws and went to the work site. The work site was a “hinoki” forest on a steep slope. Twigs were cut with a saw as far up as the hands reach. Each participant cut twigs of 40 to 50 trees.

3 Participation in Local Events

Oki Information Systems Co., Ltd. exhibited a printer that can repeatedly use the same special paper (Ecopri) in the “Environment Fair 2002”, held by Takasaki city on the occasion of the “Day of the Environment.” The fair was a lively event, with seven local companies exhibiting, and eight citizen groups holding a recycling bazaar. Among these, the Ecopri gained a lot of attention, and the exhibition was also shown on television.



Ecopri

4 Lectures

■Lecture to local residents: “How companies work for the environment”

In the “Environment Study Leader Education Lectures” held by Hachioji city, we held a lecture on efforts of companies for the environment. Approximately 40 citizens with a strong interest in the environment listened to our lecture on environmental problems in general, and Oki's environmental impacts and efforts.

■Lecture to employees in charge at credit unions and regional banks: “Oki's Environmental Efforts”

We held a lecture on Oki's efforts for the environment, such as zero-emission activities, to employees in charge at credit associations and regional banks that are Oki customers. One of the attendees voiced the opinion that he would like to know more about the recycling of used Oki products.

5 Support for Environmental NGOs

Oki Electric supports the following environmental NGOs:

- Nature Conservation Society of Japan
- Morizukuri (Forestation) Forum
- Nippon Environment Club
- Green Earth Center
- Ecosystem Conservation Society-Japan (co-sponsorship in All-Japan School Biotope Contest)

External Awards and History of Activities

■ We received the following awards in recognition of the Oki group's environmental protection programs and activities.

Awards and Citations in Connection with the Environment

Month/Year	Recipient	Award/citation name (sponsor)	Reasons for reception
Oct. 1998	Miyagi Oki Electric	President's Award, The 17th National Plant Greening Promotion Assembly (Japan Greenery Research and Development Center)	Plant arrangement with consideration for protecting the natural environment and maintenance of seasonal trees.
Feb. 1999	Miyazaki Oki Electric	Director's Award, Superior Energy Control Plant category, Kyushu Bureau of Ministry of International Trade and Industry	Remarkable results in rationalization of plant energy usage
Feb. 1999	Miyagi Oki Electric	Director General's Award, Superior Energy Control Plant category, Agency of Natural Resources and Energy	Remarkable results in rationalization of plant energy usage
Oct. 1999	Oki Honjo District	Certificate of Appreciation for Greening Efforts (City Government of Honjo City)	Contributions to the creation of "Honjo, city of green and health."
Oct. 1999	Oki Hachioji District	President's Award, High-Pressure Gas Safety Institute of Japan	Evaluated for the proper adherence to the laws and regulations, status of education and training of employees, daily operation conditions, and the no-accident record.
Feb. 2000	Oki Hachioji District	Highest Award, Kanto Region Electricity Usage Rationalization Committee	Outstanding records in electrical power usage rationalization activities.
Feb. 2000	Nagano Oki Electric	Director's Award, Superior Energy Control Plant category, Chubu Bureau of Ministry of International Trade and Industry	Remarkable results in rationalization of plant energy usage
May 2000	Miyazaki Oki Electric	Superior Award, High-Pressure Gas Safety Institute of Japan	Contribution to disaster prevention and safety assurance through the promotion of voluntary maintenance of high-pressure gases.
Nov. 2000	Oki Honjo District	Certificate of Appreciation for Greening Efforts (City Government of Honjo City)	Contributions to the creation of "Honjo, city of green and health."
Feb. 2001	Oki Hachioji District	Highest Award, Kanto Region Electricity Usage Rationalization Committee	Outstanding records in electrical power usage rationalization activities.
Jan. 2002	Miyagi Oki Electric	Minister's Award, Superior Energy Control Plant category, Ministry of Economy, Trade and Industry	Remarkable results in rationalization of plant energy usage
Jan. 2002	Miyazaki Oki Electric	Director General's Award, Superior Energy Control Plant category, Agency of Natural Resources and Energy	Remarkable results in rationalization of plant energy usage
Nov. 2002	Oki Honjo District	Certificate of Appreciation for Greening Efforts (City Government of Honjo City)	Contributions to the creation of "Honjo, city of green and health."

■ Progress of Environmental Protection Activities

May. 1981	Environmental audit begins at Oki group companies.
Apr. 1984	Environmental Management Standard is established.
Mar. 1993	Oki Environmental Protection Activity Plan is initiated.
Mar. 1993	Certain chlorofluorocarbons are totally eliminated.
Sep. 1993	1,1,1-trichloroethane is totally eliminated.
May. 1995	An advance evaluation system for the environmental impact of product design and packaging is established.
Mar. 1996	Trichloroethylene and dichloromethane are totally eliminated.
Aug. 1996	"Basic Environmental Policy" and "Environmental Protection Activity Plan" are initiated.
Mar. 1998	Major production sites become ISO14001 certified.
Jul. 1999	Used Product Recycling Center is established at Honjo District.
Aug. 1999	"Oki Eco Plan 21" is established.
Sep. 1999	"Environmental Report 1999" is issued.
Nov. 2000	Used products recycling company is established.
Dec. 2000	"Oki Eco Product Registration Standard" is established.
Feb. 2001	Head Office Safety Audit starts.
Aug. 2001	"Site Environmental Reports" for six Oki sites are disclosed.
Jan. 2002	Miyagi Oki Electric receives the Minister of Economy, Trade and Industry Award for Superior Energy Control Plant category.
Mar. 2002	All domestic production sites of Oki group are ISO14001 certified.
Sep. 2002	"Green Procurement Standard" is issued.
Mar. 2003	Major domestic production sites of Oki group achieve zero emission.

2003 Issues for 2003

◆ Contribution to the environment through our products

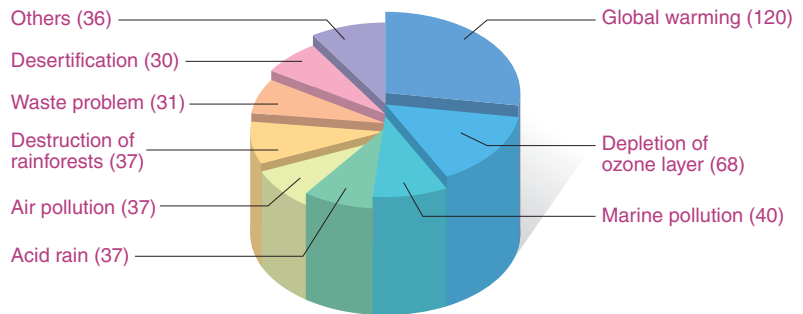
- Energy conservation during product use
- Control of environment-impacting substances contained in products
- Recycling of used products

Voices of Oki Electric's New Recruits 2002

We surveyed 153 new recruits in a questionnaire on the global environment.

Question ▶▶ What comes into your mind when you hear "problems of the global environment"?

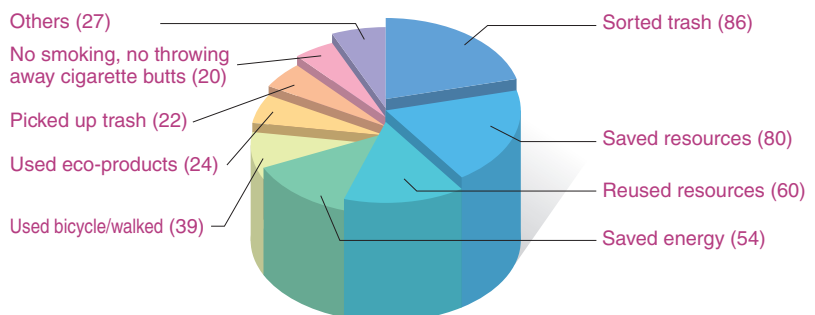
A ▶▶▶



Other replies included "war", "PCB (polychlorinated biphenyl)", "Japanese cedar pollen", and "depletion of coral reefs."

Question ▶▶ What did you do for the environment in the past year?

A ▶▶▶



Other replies included "purchased products made in Japan, because only a little energy was used for their transport", or "changed from standard-size car to a light car."

Thank you very much for reading our Environmental Report 2003.

Please feel free to contact us for any opinions or inquiries.

OKI

Oki Electric Industry Co., Ltd.

Contact Us: **Global Environment Division**

7-12, Toranomom 1-chome, Minato-ku, Tokyo 105-8460, Japan
TEL: +81-3-3581-2691
FAX: +81-3-3508-1963
E-mail: oki-ecology@oki.com

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