



Environmental Report 2002

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)

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2001 Topics

- **"Eco Plan 21" (2001 version) established. (page 6)**
Established "Eco Plan 21" (2001 version) as a target for environmental protection initiatives.
- **All Oki group's domestic production sites ISO14001 certified. (page 7)**
Six production sites obtained ISO14001, which means all domestic production sites in the Oki group are now ISO14001 certified.
- **"OKI Eco Product" registered products made available to the public. (page 12)**
Introduced the "OKI Eco Product Certification System" and made registered eco products available to the public.
- **Commenced recycling of used PCs and used small rechargeable batteries. (page 15)**
Set up a recycling system for used PCs and used small rechargeable batteries and started collecting and recycling.
- **"Zero emissions" of waste materials from plants achieved. (page 17)**
Four production sites within the Oki group achieved zero emissions.
- **Lead-free soldering mass production lines built. (page 20)**
Introduced flow soldering equipment and established a mass production system using lead-free soldering.
- **"Site Environmental Report" for six Oki Electric sites published. (page 23)**
Published "Site Environmental Report" summarizing environmental results and activities at six Oki Electric sites on Oki's web site.
- **"Superior Energy Control Plant Award" given by the Minister of Economy, Trade and Industry. (page 25)**
Miyagi Oki Electric was awarded the "Superior Energy Control Plant Award" for their remarkable result regarding effective use of plant energy.

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	Group Companies	Summary of Operations
Toranomon	Head office	Oki Data Corporation	Printer, fax machine, and peripheral equipment production
Hachioji	Electronic device development	Oki Printed Circuits Co., Ltd.	Printed circuit board production
Shibaura & Makuhari	Electronic communication equipment development	Nagano Oki Electric Co., Ltd.	Printed circuit board assembly and system testing
Honjo	Telecommunication and data transmission equipment production	Shizuoka Oki Electric Co., Ltd.	System equipment component production
Takasaki	Information processing equipment development	Miyagi Oki Electric Co., Ltd.	Semiconductor IC/LSI production
Tomioka	Information terminal equipment production	Miyazaki Oki Electric Co., Ltd.	Semiconductor IC/LSI production
Numazu	Measurement devices and CE products production	Tama Oki Electric Co., Ltd.	Semiconductor IC/LSI inspection
		Oki Sensor Device Corporation	Electronic component production
		Oki Micro Engineering Co., Ltd.	Motor and solenoid production
		Oki Erfolg Co., Ltd.	Component, die and cabinet production
		Oki Engineering Co., Ltd.	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 production
		Oki Supply Center Co., Ltd.	Component management
		Oki (Thailand) Co., Ltd.	Semiconductor integrated circuit production
		Oki (UK) Ltd.	Printer, fax machine, CE products production
		Oki Data Manufacturing (Thailand) Co., Ltd.	Printer and fax machine production

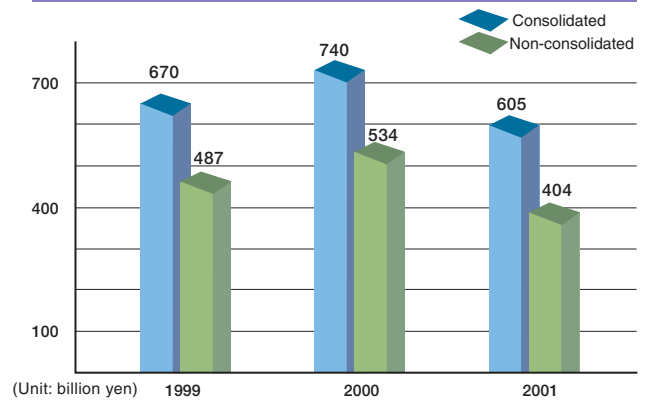
* This environmental report has been prepared based on the information and records of the programs and activities of Oki Electric Industry Co., Ltd., as well as Oki group companies for the fiscal year 2001 (April 1, 2001 through March 31, 2002). The next updated report is scheduled for June, 2003.

* 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.

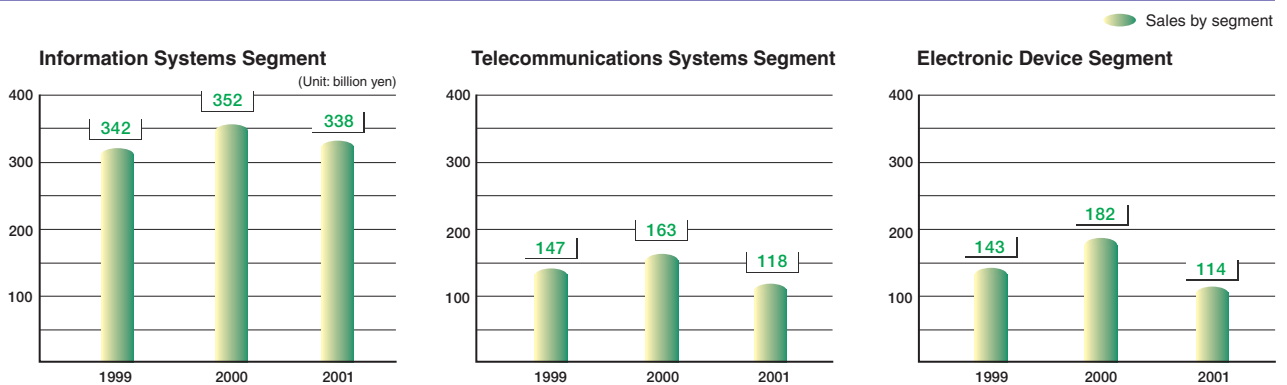
Corporate Overview

Company name	Okii Electric Industry Co., Ltd.
Foundation	January 1881
Establishment	November 1, 1949
Capital stock	JY67.9 billion (as of March 31, 2002)
Number of employees	7393 (as of March 31, 2002)
President	Katsumasa Shinozuka
Head office	7-12 Toranomon 1-chome, Minato-ku, Tokyo
Main products	Information systems, telecommunications systems, and electronic devices

Transition of Sales



Transition of Sales by Business Segment



Main Products

Information Systems



Automated teller machine
ATM21B



OKI MediaServer



CTstage4i server



Open casher CM21

Printing Solutions



LED color page printer
MICROLINE 9055c



LED color page printer
MICROLINE 3010cW

Telecommunications Systems



Carrier multimedia
communication server
CenterStage

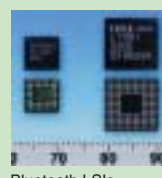


Multimedia
communication server
DISCOVERY 01



MPEG4 solution
Visual Cast

Electronic Devices



Bluetooth LSIs



10Gb/s
Optical transmitter/receiver



SOI chip

We deliver peace of mind.

At Oki Electric, we are conducting our corporate activities from the perspectives of “Delivering ‘peace of mind’ to our customers” and “Providing ‘peace of mind’ to our business partners.” One aspect of providing this “peace of mind” to our customers and business partners is our environmental program.

At Oki Electric, we consider our environmental program to be a critical theme for corporate management, so we formulated our Eco Plan 21 by renewing the previous “Oki Environmental Protection Activity Plan” in 1999. In 2001, we formulated our 2001 version of Eco Plan 21, which set new goals, and made various achievements, including the accomplishment of zero emissions at four domestic production sites. We also obtained ISO14001 certification for all domestic production sites, published information about the OKI Eco product registration standard and certified products, and commenced the use of lead-free solder in production lines.

For 2002, we are aiming to further these activities, improve resource recycling rates through product recycling, and improve and thoroughly disseminate environmental consciousness to all members of the Oki group companies, including those in nonmanufacturing departments. We shall continue to promote our efforts in fortifying our foundation as members of the emerging recycling society, by



Katsumasa Shinozuka
President and CEO

engaging in organizational structural reforms that include reorganization of production sites and their transfer overseas, while strengthening our efforts for environmental protection.

I am hoping that this report will provide you with insights into the efforts undertaken by the Oki group companies, for tackling environmental issues and contributing to our desire to deliver “peace of mind” to our customers and our business partners.

Progress of Environmental Protection Activities

May 1981	Environmental audit begins at affiliated Oki group companies.	Sep. 1999	“Environmental Report 1999” is issued.
Apr. 1984	Environmental Management Standard is established.	Aug. 2000	Environmental accounting is disclosed in “Environmental Report 2000.”
Mar. 1993	Oki Environmental Protection Activity Plan is initiated.	Nov. 2000	Used products recycling company is established.
Mar. 1993	Specific chlorofluorocarbons are totally eliminated.	Dec. 2000	“Oki Eco Product Registration Standard” is established.
Sep. 1993	1,1,1-trichloroethane is totally eliminated.	Feb. 2001	Head Office Safety Audit starts.
May 1995	An advance evaluation system for the environmental impact of product design and packaging is established.	May 2001	“Oki Eco Plan 21 (2001 version)” is established.
Aug. 1996	“Basic Environmental Policy” and “Environmental Protection Activity Plan” are initiated.	Aug. 2001	“Site Environmental Reports” for six Oki sites are disclosed.
Mar. 1996	Trichloroethylene and dichloromethane are totally eliminated.	Aug. 2001	Miyagi Oki Electric attains “Zero emission of industrial waste materials.”
Mar. 1998	Major Oki Electric production sites become ISO14001 certified.	Dec. 2001	“Lead-free soldering mass production line” is constructed at Nagano Oki Electric.
Dec. 1998	Major production sites of Oki group companies become ISO14001 certified.	Feb. 2002	Miyagi Oki Electric receives the Minister of Economy, Trade and Industry Award for Superior Energy Control Plant category.
Mar. 1999	Company standards for the “Green Procurement Guidelines” are established.	Mar. 2002	All domestic production sites of Oki group companies are ISO14001 certified.
Jul. 1999	Used Product Recycling Center is established at the Oki Electric Honjo District.		
Aug. 1999	“Oki Eco Plan 21” is established.		

Basic Environmental Policy and Activity Promotion Organization

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.

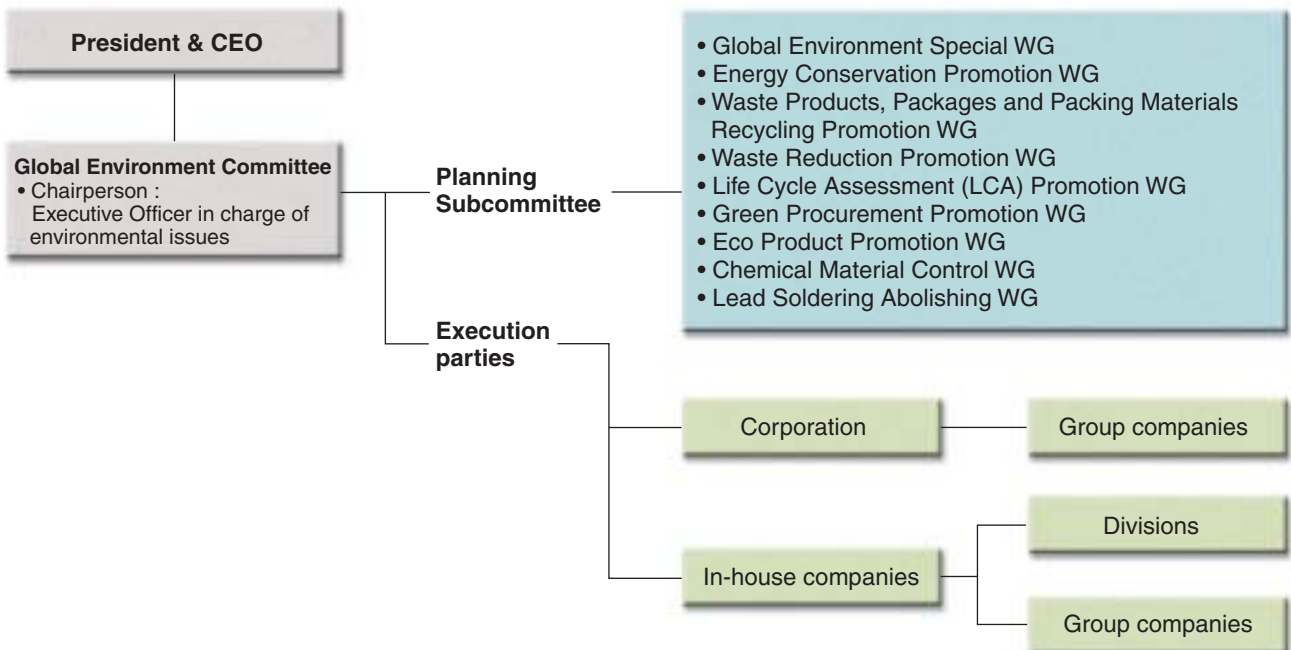
■ Activity Guidelines

- 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.

Activity Promotion Organization

A comprehensive organization has been established to promote environmental protection activities of the entire Oki group. The Global Environment Committee consists of representatives from the corporation and companies

of Oki Electric to deliberate overall environmental protection activities. The Planning Subcommittee embodies deliberation results of the Committee.



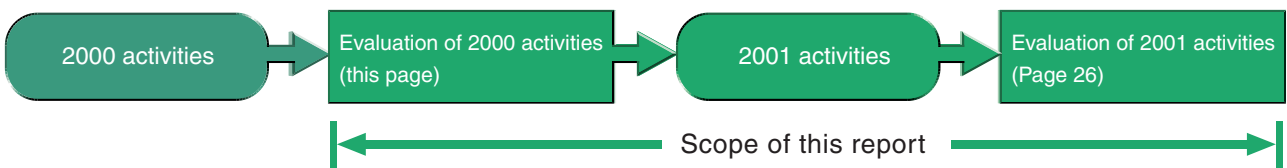
Self-Evaluation of Environmental Protection Activities

Self-evaluation of environmental protection activities

The environmental management system of Oki Electric has been operating in compliance with the ISO14001 standard. In our environmental management system, we first evaluate existing activities, and reflect the results of such evaluations on future activities, thereby realizing a "continued reduction of environmental impact."

We at Oki Electric are evaluating our environmental protection activities each year, based on the information

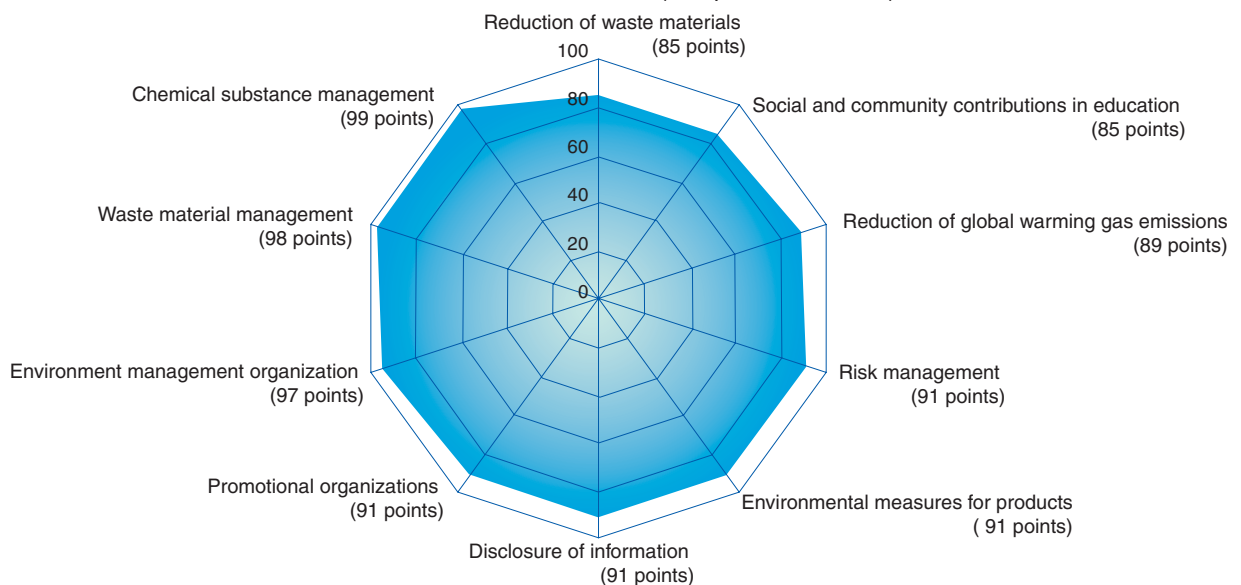
concerning the impact we have on the environment, as well as internal and external trends, in order to implement measures against any weaknesses found in activities and to plan programs for the following year. For the period covered by this report, year 2001, we conducted a self-evaluation of our performance for 2000, and reflected the following results in our Environmental Protection Activity Plan (the 2001 version of the Eco Plan 21).



Reflection of the self-evaluation results to "Eco Plan 21" (2001 version)

Category	Reflected items
Prevention of global warming	<ul style="list-style-type: none"> ● Reduction in emission of greenhouse gases (PFC gases) ● Switching corporate vehicles to ecological automobiles
Measures regarding recycling of resources and relieving overburdened disposal sites	<ul style="list-style-type: none"> ● Zero emission of industrial waste
Development of eco-friendly products	<ul style="list-style-type: none"> ● Promotion of ecological merchandizing
Enhancement of environmental management system	<ul style="list-style-type: none"> ● ISO14001 certification of non-production sites
Suppressing environmental pollutants	<ul style="list-style-type: none"> ● Enhancing management and suppressing emissions of environmental pollutants ● Total elimination of lead-containing solders
Disclosure of information, etc.	<ul style="list-style-type: none"> ● Disclosing environmental reports at industrial sites and supporting non-governmental environmental organizations

Results of the self-evaluation for activities in 2000 (100 points maximum)



Environmental Protection Activity Program (Oki Eco Plan 21)

"Oki Eco Plan 21" and the results of activities in 2001

Oki Electric established the "Oki Eco Plan 21" (2001 version) in 2001 as its environmental protection activity program. This has been the foundation of all related

activities. In 2002 Oki will establish its 2002 version based on the results of 2001.

Oki Eco Plan 21

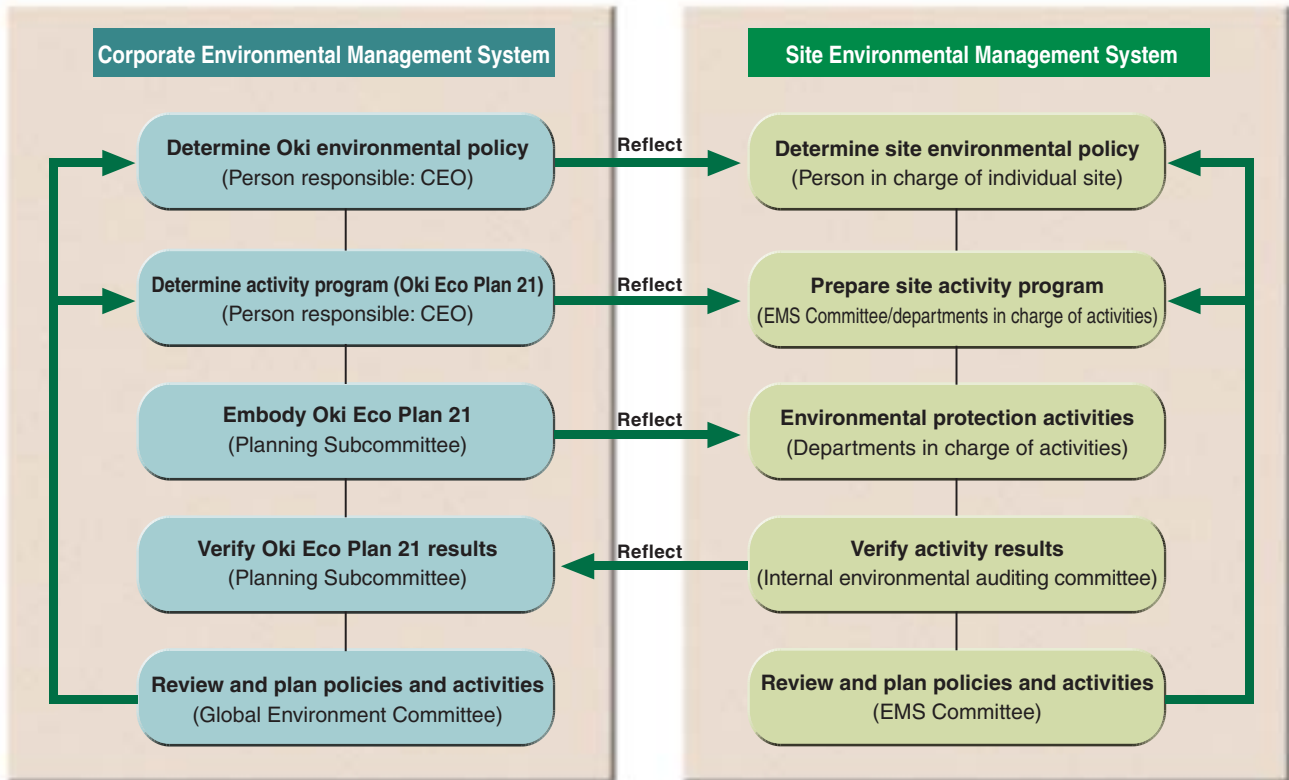
Category		Target	2001 activity results	Page
Global warming protection	Reduction of energy consumption and CO ₂ emissions	Reduce CO ₂ emissions (basic unit) by 30% of the total for 1990 by the end of 2010.	27.8% increase from the total for 1990.	18
	Reduction of greenhouse gas (PFC gas) emissions	Reduce greenhouse gas emissions by 10% of the total for 1995 by the end of 2010.	- 7% increase from the total for 1995. - 27% decrease from the total for 2000.	18
Resource recycling and measures for the overloading of waste processing plant	Reduction of waste	Achieve zero emissions for all major production sites by the end of 2004. Reduce final waste processing amount by 70% of the total for 2000 at major production sites by the end of 2004.	1) Four production sites achieved zero emissions. 2) 49% reduction from the total for 2000.	17
	Recycling rate increase	Achieve a used product recycling rate of 96% by the end of 2002 (nation wide).	95.7% recycling rate	15
Development of eco-friendly products	Promotion of eco products	Aim to satisfy the OKI Eco Product Registration Criteria for all products to be developed in 2002 onward (excluding devices).	Fifteen products were approved as OKI Eco Products and publicized.	12
	Introduction of LCA	Introduce life cycle assessment (LCA) for main products by the end of 2001.	Implemented for main products (communication equipment, printers).	11
	Expansion of green procurement activity	Publish green procurement guidelines by the end of 2001.	Extended to the end of 2002.	13
Fortification of environmental management system	Expansion of ISO 14001-certified sites	- Uncertified production sites obtain certification by the end of 2001. - Major nonproductive sites obtain certification by the end of 2003.	1) Six production sites obtained the certification (target cleared). 2) Activity in progress.	7
Pollutant control	Fortification of control of pollutants and reduction of their emissions	Fortify control of pollutants and reduce emissions of PRTR-designated materials.	Emissions of PRTR-designated materials reduced by 29% of the total for 2000.	19
	Elimination of lead-containing solders	Eliminate the use of lead-containing solders for domestic production by the end of 2003.	Lead-free production lines were built.	20
Information disclosure	Publishing of site environmental reports	Publish environmental reports for major sites.	Six major sites published their environmental reports	23
	Assistance to environmental NGOs	Assist environmental NGOs.	Assisted four NGOs	24
	Introduction of eco vehicles	Gradually replace normal vehicles with eco vehicles.	Activity in progress.	—

Environmental Management System

Environmental Management System Overview

Oki Electric has established an environmental management system, which covers all Oki group companies, to promote environmental protection activities. The system reflects our corporate policy and plans in the policies

and plans of individual Oki sites and group companies, and also reflects their activity results in the corporate policy and plans.



All domestic production sites of Oki group ISO14001 certified

Activities following the ISO14001 standard are effective for reducing the impact on the environment, in connection with production activities and the products themselves. The environmental management system, which complies with the ISO14001 standard, has been implemented at Oki Electric as well as at the sites of

various affiliates, within the Oki group companies. In 2001 five domestic production sites and one overseas production site were ISO14001 certified, which means that all domestic production sites have now been ISO14001 certified. Oki will further expand acquisition of ISO14001 certification for their non-production sites.

ISO14001-certified sites

Up to 2000	In 2001
<ul style="list-style-type: none"> ●Oki Hachioji District ●Oki Tomioka District ●Oki Numazu District ●Miyazaki Oki Electric ●Miyagi Oki Electric ●Tama Oki Electric ●Oki Printed Circuits Co., Ltd. ●Oki Environment Technologies Co., Ltd. ●Oki Semiconductor Manufacturing Group ●Oki (UK) Ltd. 	<ul style="list-style-type: none"> ●Oki Takasaki District ●Oki Honjo District ●Oki Shibaura/Makuhari District ●Nagano Oki Electric ●Shizuoka Oki Electric ●Oki Data Corporation
<ul style="list-style-type: none"> ●Oki (Thailand) Co., Ltd. 	<ul style="list-style-type: none"> ●Oki Communication Systems Co., Ltd. ●Oki Power Tech Co., Ltd. ●Oki Micro Engineering Co., Ltd. ●Oki Erfolg Co., Ltd. ●Oki Sensor Device Corp. ●Changzhou OKI-GEG Telecoms Ltd.

Environmental Management System

Environmental Education

General employee education

There are two types of environmental education at Oki Electric, one that is provided to Oki Electric and other affiliates in the Oki group companies, and the other local site education which is conducted independently by each individual site.

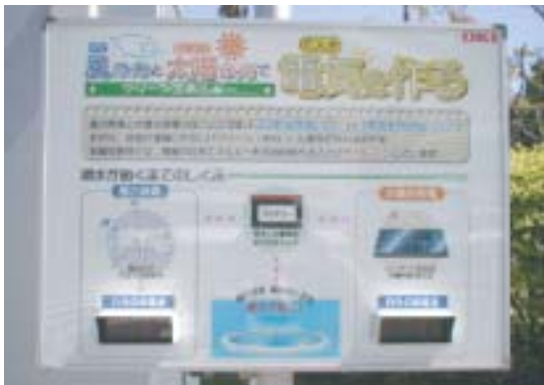
Local site education

(A seminar on environmental laws, provided by an external instructor in the Hachioji District)



Local site education

(Descriptive panel on mechanisms of a wind power generator and a photovoltaic power generator)



A Mongolian-type wind power generator and a photovoltaic power generator developed by a local public occupational school are used as sources of power for the pumping of a water fountain (Miyazaki Oki Electric).

Training of internal environment auditors

Periodic audits are necessary in order to evaluate and ensure reliability of the environmental management system. Oki Electric has been conducting training for internal environment auditors for this purpose. 126 people completed this training program in 2001. As a result, the total number of people who completed the training program for internal environmental auditors reached 415.

Environmental Audit

Environmental audit conducted at Oki includes a headquarters safety audit and internal environment audits for ISO14001 certified sites, as described in the table below. Internal environmental audits are conducted at least once a year at relevant sites, by groups composed of the auditors of the relevant site as central members, joined by auditors of other sites.

Name of environmental audit	Description of audit
Headquarters safety audit	<ul style="list-style-type: none"> ● Policy and specific measures for safety management ● Management organization and activities ● Daily management status for risk occurrence factors
Internal environment audit (Compliance with the ISO14001 standard)	<ul style="list-style-type: none"> ● Compliance of environmental management system with the ISO14001 standard requirements ● Regulatory compliance status ● Achievement status of voluntarily set objectives and targets

Results of headquarters safety audit for 2001

Environmental pollution on a large-scale is occurring due to earthquakes and fire disasters. To prevent environmental pollution, Oki Electric is implementing audits on the management of risks arising from natural disasters and occupational hazards (headquarters safety audit).

Sites subject to audits

Audits were conducted at domestic and overseas production sites of Oki Electric and Oki group companies (including engineering and development divisions, such as Research and Development Division, involving 21 domestic sites and 6 overseas sites, totaling 27 sites.

Audit results

A total of 98 items were highlighted through the audits.

Examples of items highlighted through safety audits

- Issues concerning risk prevention measures against objects falling during earthquakes
- Issues concerning the execution status of emergency drills
- Issues concerning the management of protective equipment (masks, gloves, etc.)

Follow-up action

- Results were reported at a management meeting.
- Early implementation of measures for items highlighted by audits was verified.
- Items highlighted were fed back to all production sites, and re-execution of audits was conducted for critical items highlighted during previous audits.
- Results will be implemented for the audits of the following year.

Environmental Accounting

1. Fiscal 2001 Environmental Accounting Records

In order to pursue activity programs for environmental protection in an effective and efficient manner, Oki has been promoting activities to establish an environmental accounting system since 1999. Oki Electric and the 20 consolidated affiliated companies, including those overseas, had implemented the system by the end of FY2001. Results of the FY2001 environmental accounting are presented below.

- Environmental protection costs included a total investment of JY330 million and total expenses of JY3.19 billion.

- Environmental protection effects included a reduction in the final industrial waste quantity by 49% due to the zero emission activity, when compared to the previous year. The CO₂ emissions were reduced 7% from those for the previous year.
- Combining all the economic effects achieved, in connection with the environmental protection measures, bringing about a total saving in real terms of JY1.04 billion.

■ Environmental Protection Costs

● Investment: JY330 million (previous year: JY 750 million)

● Expenses: JY3.19 billion (previous year: JY3.07 billion)

(Unit: JY million)

Category	Breakdown (main items)	Total cost
Operational costs	Maintenance and depreciation costs of environment-related facilities	2,320
Pre and post operational costs	Collection of used products, recycling cost	180
Management activity costs	Environmental management operational cost	610
R&D costs	Research and development for reducing environmental impact of products and production processes	30
Social and community activity costs	Environmental improvement cost for greening and community activities and environmental report preparation cost.	50

■ Effects Concerning Environmental Protection Measures

● Environmental protection effects

Environmental impact index	Main activities	Impact (total)	Reduction from previous year
CO ₂ emissions (tons-CO ₂)	Reduction of energy consumption	246630	18540 decrease
Final waste processing (tons)	Reduction of waste disposal	308	294 decrease

● Substantial effect of costs for the environmental protection measures: JY1.04 billion (previous year: JY1.01 billion)

(Unit: JY million)

Category	Main activities	Amount of effect
Cost reduction effect	Reduction of electrical power consumption, waste disposal and resource costs due to recycling	930
Direct income effect	Sale of valuable assets 110	110

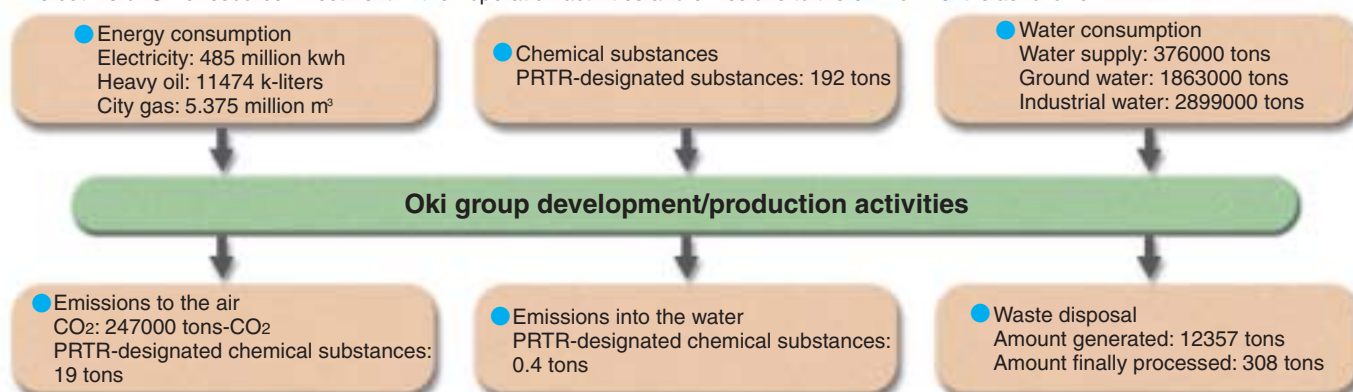
[Compilation period] April 1, 2001 to March 31, 2002

[Conditions of accounting]

- (1) This environmental accounting report has been prepared in accordance with the "Guidelines for the Implementation of the Environmental Accounting System (Year 2000 Edition)" published by the Ministry of the Environment.
- (2) The depreciation cost of invested facilities is calculated using the fixed installment method for a period of three years. The effect resulting from the facilities is calculated for three years (depreciation period).
- (3) When the environmental protection cost overlaps with other costs, only the cost for environmental protection is calculated.
- (4) Personnel expenses are calculated by prorating the personnel costs for the total time spent on the environmental protection activities.
- (5) Environmental protection effects are calculated by obtaining the environmental impact amounts reduced in the production operation.
- (6) A portion of the accounting includes figures relating to the affiliated companies located within the sites, which have participated in the environmental impact management.

Resource Investment in Operation Activities and Emissions to the Environment

The outline of Oki's resource investment in their operation activities and emissions to the environment is as follows:



Products have an impact on the environment throughout their long product life, right through from the production stage to the disposal stage. In order to provide products that have less of an impact on the environment, it is essential to evaluate the environmental impact of products throughout their life cycle with respect to energy conservation,

resource saving, recycling, and hazardous and toxic contents, and to improve on these issues as much as possible through the development and design stages of the products. At Oki Electric, we are engaging in environmental impact reduction activities throughout the life cycle of products, by conducting product assessments.

Product Assessments

During product assessment, evaluation items (resource saving, power consumption, ease of disassembly, etc.) are compared between designed models and reference models, and the design process is repeated until the criteria for satisfying the judgment standards have been met. Thus, Oki is making continuous efforts for reducing the environmental impact. Product assessments for manufactured electronic equipment and electronic devices are conducted at Oki Electric.

■ Assessment for electronic equipment

Product assessment for electronic equipment is conducted with the check sheet (1). The “Resource saving” of the check sheet is shown as an example of items included in the check sheet.

① Description of product assessment (an example for evaluating “resource saving”)

Category	Check items	Former model	New model	Improvements	Evaluation	Judgment
<ul style="list-style-type: none"> ● Miniaturization ● Weight reduction ● Resource saving 	Reduction of product weight (Comparisons made with existing products or by specified performance)	13 kg	10.7 kg	18 %	2	○
	Reduction of product volume (Comparisons made with existing products or by specified performance)	0.034 m ³	0.021 m ³	38 %	2	○
	Reduction in the number of product components (Comparisons made with existing products or by specified performance)	360 items	330 items	8	1	○
	Use of recycled paper certified with the Eco Mark for catalogs, user's guides and manuals.	×	○	—	2	○
	Increase in utilization rate of recycled resources. Utilization rate of recycled resources = (1) / (2) x100 (1) Mass of recycled resources used (recycled plastics, etc.) [Note 1] (2) Mass of product's main unit	① 0.5 kg ② 13 kg	① 2 kg ② 10.7 kg	—	2	○
<ul style="list-style-type: none"> ● Extended product life 	Are parts and consumables, which are in use but have a shorter life, easily replaced? (Comparisons made with the existing products regarding replacement time of parts and the number of screws that need to be removed.)	0.25 H	0.21 H	16 %	2	○
<ul style="list-style-type: none"> ● Reduced consumables 	Reduction in the amount of consumables used. (Comparisons made regarding consumption quantity of standard consumables.)	111 pieces	92 pieces	17 %	2	○

■ Results of assessment for electronic equipment

The results of the product assessments, conducted on telecommunication equipment during the year 2001, are described below:

Product assessment results

Product group	Number of applicable models	Size/weight reductions (average reduction rate)	Energy saving (average reduction rate)	Internal assessment evaluation
Telephone, switching and transmission equipment	7	42%	34%	PASS
Computer telephony integrated equipment	8	23%	25%	PASS

(The average reduction rate is calculated based on the environmental impact (per function) of existing similar models of Oki Electric.)

Product Assessment and LCA

Assessment for electronic devices

Product assessment is utilized in the development and design stages of electronic devices to promote a continued reduction of the environmental impact through energy saving and resource saving, etc. An example of a check sheet used for product assessment is shown below.

Description of product assessment (an example of “package” evaluation)

	Reviewed items	Check items	Former model	New model		Preliminary evaluation	Secondary evaluation
				Preliminary	Secondary		
Chemical substances	Substances prohibited for use in manufacturing processes	Number of substances	0	0	—	○	—
	Substances prohibited for inclusion in products	Number of substances	0	0	—	○	—
	Substances suppressed for inclusion in products	Number of substances	0	0	—	○	—
	Substances controlled for inclusion in products	Number of substances	2	3	1	×	○
	Total						
Package size		Reduction rate	100%	68%	—	○	—
Are customer's environmental requirements being satisfied?			○	○	—	○	—

Results of assessment for electronic devices

The following table is an example of the product assessment for memory LSI in 2001.

Product assessment results

Item		Reference product	Developed product	Reduction rate (%)
Product specifications	Memory size (Mbit)	32	64	
	Power voltage (V)	3.0~3.6	3.0~3.6	
	Power consumption (mA)	50	50	
Energy saving (nW/bit)		4.5	2.8	37
Resource saving	Chip footprint/Mbit	1.0	0.7	32
	Package size (mm ²)	217	217	0

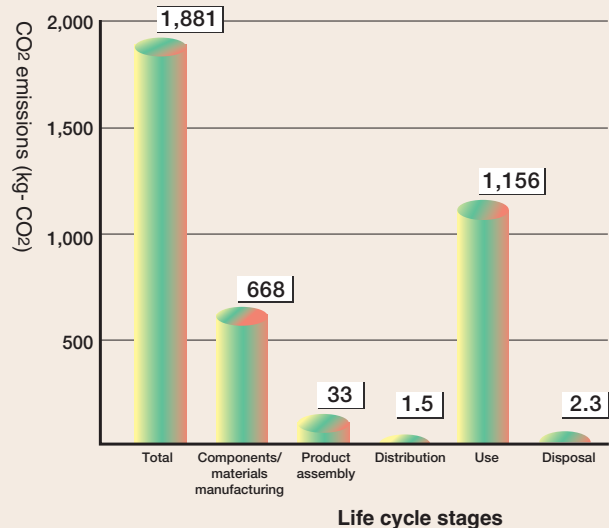
Promotion of LCA

Promoting Life Cycle Assessments (LCA)

An evaluation can be made easily with a product assessment, so many companies are using product assessment. With this method, however, it is not possible to analyze at which stage throughout the product life cycle the environmental impact is greatest. For this reason, it is difficult to formulate effective measures based on this method. Introduction of LCA is being promoted to compensate for this flaw in this method.

A series of trial runs of LCA was conducted with printers and telecommunication equipment in 2001. The diagram on the right shows the results obtained from the LCA for printers. This shows the point during the life cycle of the product which represents where carbon dioxide (CO₂) emissions are at their highest. This result is utilized in the design of the product.

Results of LCA for printers



Oki Eco Product Certification Program

Operation of the "Oki Eco Product Internal Certification Program"

We at Oki Electric have implemented the "Oki Eco Product Internal Certification Program" to provide environmentally friendly products to our customers. This program offers a means to internally certify products which meet Oki's own environmental standards, and to convey environmental information of products to our customers.

Certified products are identified with a symbol mark in catalogs, user's guides and manuals, and open up on the Oki web site along with certification standards.

Symbol mark
Oki eco-product



Internal certification standards for Oki eco-products

Products which meet the common standard for all products (Common Corporate Standard) and an individual standard designed for a particular product (Product Group Standard) are certified as "Oki Eco Products." The Common Corporate Standard is described on the right.

Product groups and the number of certified models

The current number of models certified as "Oki Eco Products", as of March 31, 2002, are as shown below. We will continue to increase the number in the future.

●Number of "Oki Eco Product" certified models

Product group	Number of certified models
OA equipment	7
Telecommunications equipment	7
Financial equipment	1



An example of an "Oki Eco Product" certified model (VoIP Gateway BV1260)

Common Corporate Standard

Resource saving

- Recycled paper, certified with the Eco mark, shall be used for catalogs, user's guides and manuals.
- Recycled paper shall be used for cartons and corrugated packing materials.

Recycling facilitating

- Material names shall be indicated for all plastic parts weighing 25g or more.
- Plastic parts shall not be coated with paint or treated with plating that may hinder recycling.

Energy saving

- Products, to which energy saving laws and regulations apply, shall conform to the required standards.
- Products, to which the International Energy Star Program apply, shall conform to the required standards.

Hazardous and toxic substance regulations

- Substances prohibited for use by Oki shall not be included in products and packaging materials.
- Polyvinyl chloride resins shall not be used as cushioning material or packaging material.
- Ozone layer depleting substances, which are prohibited by the Montreal Protocol, shall not be used in internal production processes.

Preliminary evaluation execution

- Assessments shall be conducted during the design stage of products and packaging.

Used product collection and recycling

- A system to collect and recycle used products shall have been established (for products intended for business customers).

Marking products with cautions for disposal

- Cautions concerning disposal process shall be included in user's guides and manuals.

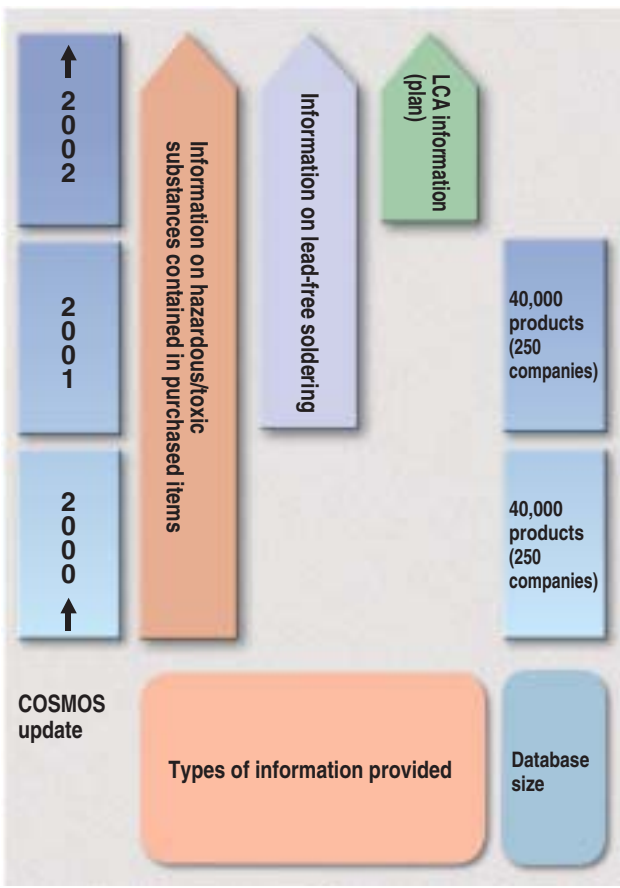
Green Procurement

Oki Electric has been concentrating its efforts in green procurement to reduce the environmental impact of Oki products produced, as the majority of items purchased comprise parts and materials used in manufactured products. The following are the major items of environmental impact caused by purchased items:

- (1) CO₂ emissions through energy consumption, discharge of waste materials, and discharge of chemical pollutants during the manufacture of purchased parts.
 - (2) CO₂ emissions due to power consumption of purchased electronic components.
 - (3) Outflow of toxic substances at the time of product's disposal.
- We at Oki Electric are engaged in the following activities in order to reduce such environmental impact relating to purchased items.

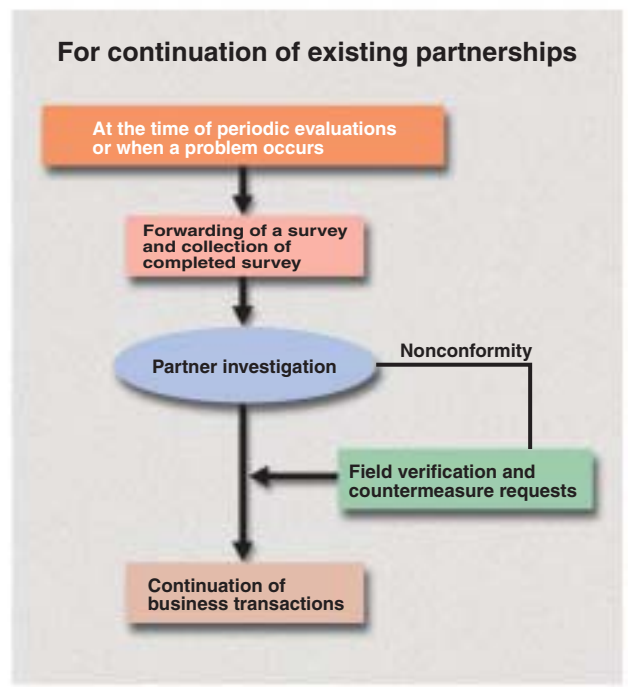
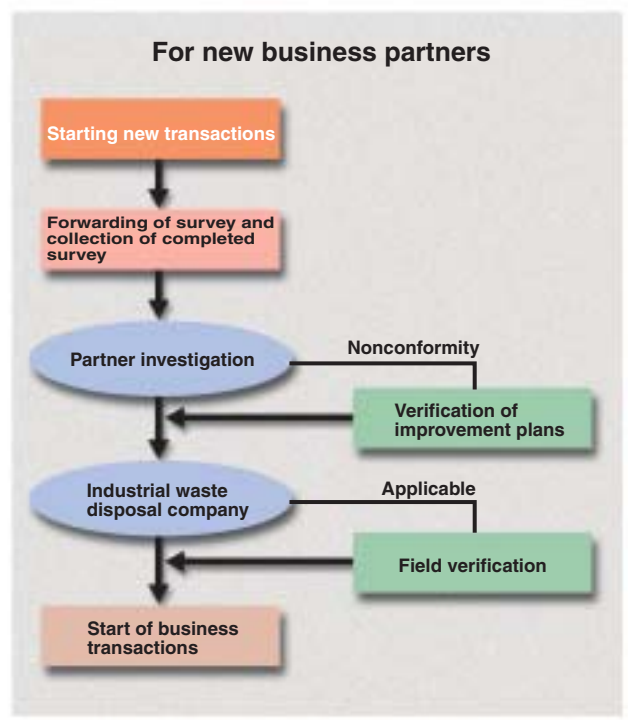
Operation of hazardous and toxic substances information management system

A hazardous and toxic substance management system (known internally as "COSMOS") has been established to reduce the use of chemical substances that may adversely affect the environment. This system is in operation in conjunction with the in-house networks and design tools, offering information that allows engineers to design products by selecting parts and materials which are eco-friendly. The COSMOS database is being updated each year both in terms of quality and quantity.



Business partner evaluation

The environmental impact generated by purchased materials and during the manufacture of parts can also be considered as the environmental impact of Oki products. In order to reduce such environmental impact, Oki conducts "business partner evaluations." The following diagram shows the flow for business partner evaluation conducted at the Semiconductor Division. The regulatory compliance status and environmental protection activity status are verified, while improvement requests are offered and field verifications are conducted as deemed necessary.





Oki's products are eco-friendly throughout their entire life cycle from their design and production stages through to their disposal. Some eco-friendly product groups include products with unique features shown below.

Development of a printer capable of printing 500 times repeatedly on a single sheet of paper

Oki Information Systems Co., Ltd. is developing a printer (Ecopri) that can print repeatedly using special paper. Ordinary printers use toner and ink on OA papers, making it impossible to erase printed letters. With the Ecopri printer, however, "rethermal paper" is used, which makes it possible to erase the printed letters and reuse the paper for printing new content. For practical use, this printer can reprint letters or images on the same sheet of paper approximately 500 times, making the quantity of paper used "practically none." Further, since consumables such as toner and ink are not required, waste materials are virtually nonexistent.

The key component for this system that erases printed content and reuses the same paper for printing is the rethermal paper. Under normal conditions, the color of this paper is white. When this paper is heated, the color

changes to black, and slowly cooling the paper changes the color to white again. The property of the paper is also such that when the paper is first heated and then rapidly cooled, it remains black.

An Ecopri printer takes advantage of this property, and carries out erasing of printed content and printing on the same paper in the following manner. First, heating to a temperature of 110 to 150°C is carried out over the entire surface of rethermal paper, and the paper is then slowly cooled to erase the printed content. Next, heating to a temperature of 150 to 200°C is carried out for printing on only the letter and image portions of the paper's surface, and the paper is then cooled rapidly. The portions where heat was applied remains black, which means that a printed surface can be seen.



External view of "Ecopri"

Ecopri specifications

Printing method: Thermal printing

Paper size: JIS A4 size maximum

Print colors: One color selectable from blue, red, and black (by choosing particular papers)

Print resolution: 200 dpi

Printing speed: 8 sec./A4

Number of reprints: 500 times (on a single sheet of paper)

Erasing method: Heat roller method

Inquiry: eco-ois@oki.com

"Mizumonban" (Watergate keeper) manages water quality

"Mizumonban" refers to automatic measuring equipment operated remotely using a personal computer to monitor, in real-time, the quality of water discharged by production plants. This equipment was developed solely by Oki Environment Technologies Inc., and is being used to monitor water quality on a daily basis. The primary feature of this equipment is to continuously monitor three selectable types of ion concentration, such as ammonium or nitric acid, along with pH (hydrogen ion concentration).

Monitored data is continually transmitted to a personal computer at a department in charge of maintenance. If the monitored figures exceed the regulation figures, the abnormal state is detected and an emergency shut down signal is output using an alarm. Alarm information can also be sent to individual cellular phones.

For inquiries, dial +81-426-62-5611.



External view of "Mizumonban"

Recycling of Used Products

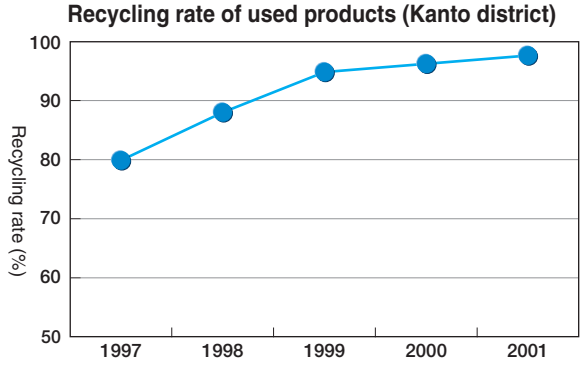
In order to create a resource recycling society, it is necessary to use resources efficiently and reduce the amount of disposed materials. Oki Electric has set the following goal and is striving for the recycling of used products.

■Goal: Achieve 96% recycling rate of used products by the end of 2002 (nationwide).

Activities for Recycling Used Products in 2001

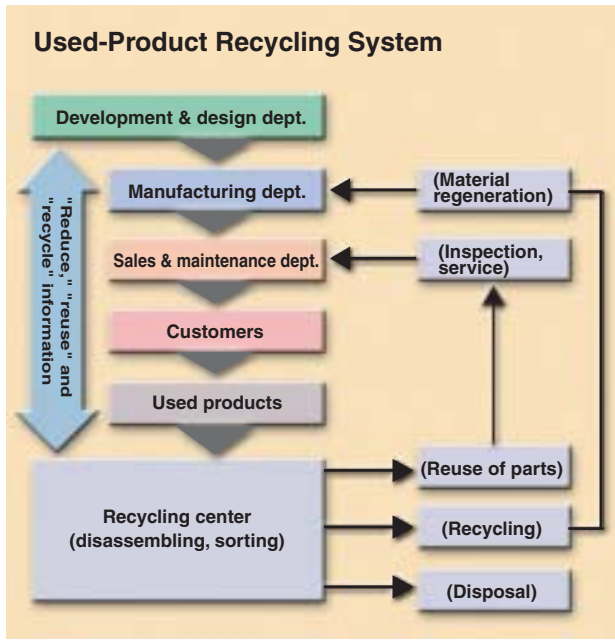
The total amount of collection of used products (mainly ATMs) in 2001 was 2265 tons, and 2167 tons was recycled. Thus the recycling rate reached 95.7% nationwide and 96.5% in the Kanto district where the recycling rate is relatively high.

Oki published on its web site that we will collect used personal computers from companies and recycle them using Oki's recycling system, in accordance with the Law for Promoting Effective Use of Resources (Revised Recycling Law). Furthermore, Oki built a recycling system for used small rechargeable batteries, and already started collection and recycling of such batteries.



Used-Product Recycling System

Oki built a used product recycling system within the Honjo district in 1999, to ensure appropriate processing of used products and to utilize the know-how in the product design process. Then the system has been improved to the current configuration shown on the right. With this configuration including a recycling center as a core component, "reduce," "reuse" and "recycle" are fully functioning.



Recycling Rate Estimate for Used products

Used product recycling rate usually includes the rate of material recycling and thermal recycling. From the perspective of environmental impact, material recycling is preferable. Therefore, we estimated only material recycling rate by pursuing the recycling process of telecommunication equipment (240kg), as a sample model, to the final stage. The following table describes the estimate result, indicating that 81 to 87% of the equipment's mass can be reused. Oki will further increase the recycling rate of used products.

	Disassembled parts/materials	Recycled material	Material recycling rate (%)	Total recycling rate (%)
Telecommunication equipment (100%)	PCBs (boards, electronic components)	Copper	2.8~7.1	81~87
		Iron	0.3~1.4	
	Metal parts (cabinet, racks, etc.)	Iron	75.4	
	Cables (copper wires, etc.)	Copper	1.8~1.9	
	Plastics (covers, etc.)	—	—	

Reduction of Production Plant Waste Materials and Recycling

Oki Electric set a target in 1997 to reduce the final disposal amount of production plant waste (normal waste and industrial waste) by 70%, and achieved the goal in 2000. We are now promoting activities for zero emissions.

[Target]

- Major production sites achieve zero emissions of plant waste by the end of 2004.
- Major production sites reduce the final disposal amount of plant waste by 70% of that of 2000.

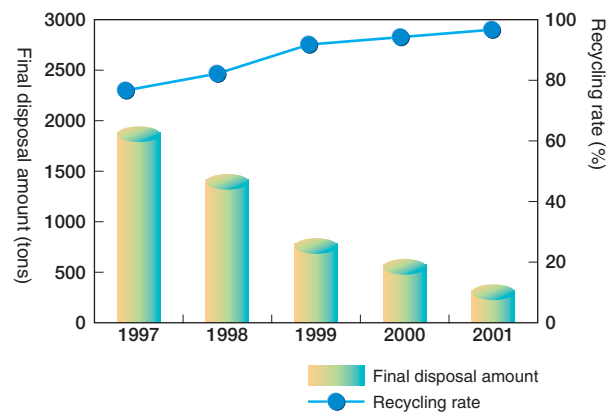
2001 Results of Production Plant Waste

Oki took the following three approaches to reduce waste from production plants and business offices.

- Suppress the generation of waste by reviewing and improving processes.
- Reuse and recycle waste materials as much as possible.
- For used products for which disposal is unavoidable, decrease their volume to reduce the burden on waste processing sites.

As a result, the final disposal amount of plant waste in 2001 was 308 tons, which is 49% decrease from that of 2000. The recycling rate of plant waste also improved to 97%.

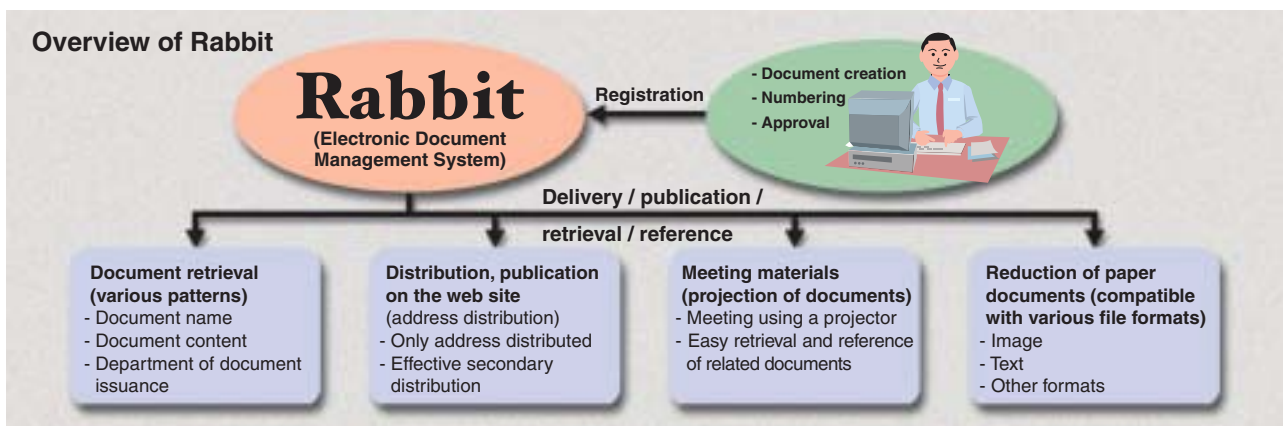
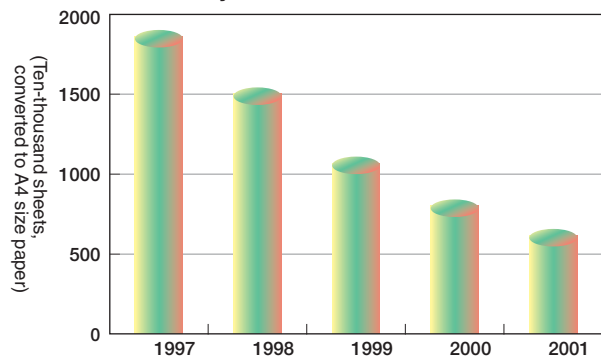
Final disposal amount of plant waste and recycling rate (at major production sites)



Activities for Reducing Office Waste

Each district of Oki Electric is striving to reduce the amount of paper used and disposal amount using the Electronic Document Management System (internally called "Rabbit"). By effectively using the Rabbit system and networks, the amount of paper used has been substantially reduced in the Tokyo and Makuhari districts.

Amount of paper used in the Tokyo and Makuhari districts



Reduction of Production Plant Waste Materials and Recycling

Zero emission efforts

Four production sites of the Oki group companies, including Miyazaki Oki Electric, succeeded in achieving zero emissions of plant waste during 2001. Main

activities conducted at the individual sites are described below.

Site summary	Zero emission efforts	Critical agendas for the future
<p>Miyazaki Oki Electric</p> <p>Location : Kiyotakecho, Miyazaki-gun, Miyazaki Prefecture</p> <p>Number of employees : Approx. 1,500</p> <p>Products : Semiconductor ICs/LSIs</p>	<ul style="list-style-type: none"> ●General and industrial waste materials have been classified into 88 categories, in an effort to sort out the items thoroughly in order to make resource recycling easier. ●Concentrated resource recycling measures (converting materials into cement raw materials) were conducted for inorganic sludge, which represents the highest discharge quantity. The final disposal quantity has been reduced from 364 tons in 1995 to zero tons by July of 2001. ●The amount of sulfuric acid used has been reduced by optimizing the concentration of sulfuric acid used in the semiconductor manufacturing process (96 tons per year). 	<p>Shifting of efforts from thermal recycling to material or chemical recycling.</p>
<p>Nagano Oki Electric</p> <p>Location : Komoro City, Nagano Prefecture</p> <p>Number of employees : 374</p> <p>Products : Office Automation equipment, automated equipment controllers, and electronic equipment</p>	<ul style="list-style-type: none"> ●Resource recycling was achieved through the conversion of polyvinyl chloride packaging materials into gaseous fuel (25 tons per year). ●Generation of waste materials was suppressed by returning packaging containers of electronic components to their manufacturers for reuse (6 tons per year). ●Recycling method for plastic containers of electronic components was changed from conversion into solid fuels to material recycling, which presents less environmental impact (8 tons per year). 	<p>Shifting efforts from “quantity to quality” and engage in efforts for “realization of lead-free soldering.”</p>
<p>Oki Electric Honjo Production Division</p> <p>Location : Honjo City, Saitama Prefecture</p> <p>Number of employees : Approx. 600</p> <p>Products : Telecommunication and network equipment</p>	<ul style="list-style-type: none"> ●The amount of paper used in 2001 has been reduced by 23% (1.5 million sheets) of that of the previous year, through the implementation of electronic approval for internal documents and an electronic data interchange (EDI) system for transactions with business partners. ●The generation of waste materials has been suppressed by measures taken to extend the useful life of solders. ●Packing and cushioning materials have been returned to vendors to maximize the amount of recycled materials (13 tons per year). ●The processing of branches and leaves, resulting from the pruning of trees within the premises, was changed from an incineration process to a composting process by the purchase of a grinder (30 tons per year). 	<p>Further efforts will be made to simplify product packaging and to suppress the generation of waste materials.</p>
<p>Miyagi Oki Electric</p> <p>Location : Ohira-mura, Kurokawa-gun, Miyagi Prefecture</p> <p>Number of employees : Approx. 950</p> <p>Products : Semiconductor ICs/LSIs</p>	<ul style="list-style-type: none"> ●General and industrial waste materials have been classified into 60 categories in an effort to sort out the items thoroughly, in order to make resource recycling easier. ●Dehydration treatment facility was upgraded to limit sludge discharge by reducing the amount from 2,351 tons in 1997 down to 92 tons in February of 2002. The entire remaining amount was recycled into raw materials for cement. ●Allowable limit of concentration and optimum mixture ratio for chemicals used in semiconductor manufacturing processes were evaluated to reduce the amount of sulfuric acid waste discharge in 2001 by 280 tons from that for 1997. 	<p>Internal recycling of chemical substances used in manufacturing processes will be promoted.</p>



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

Efforts for Reducing Greenhouse Gas Emissions

The global warming brought on by the increasing amount of CO₂ and other greenhouse gases is considered to be the gravest issue among all environmental problems we face today. Reduction in the amount of greenhouse gas emissions, as a means to counter this problem, is the most critical

agenda.

At Oki Electric, we have set reduction targets and are engaged in activities to reduce CO₂ emissions arising from the use of electrical power and fossil fuels, as well as greenhouse gases (PFC gases) used in the semiconductor manufacturing processes.

[Target]

- Reduction of the amount of CO₂ emissions (basic unit, Note 1) by 30% of that of 1990 by the end of 2010.
- Reduction of the amount of greenhouse gas (PFC gas) emissions by 10% of that of 1995 by the end of 2010.

(Note 1) Basic unit: Amount of CO₂ emissions / production quantity

Record of Greenhouse Gas Reductions in 2001

- The CO₂ emission quantity (absolute quantity) was reduced by 7% (equivalent to 18,500 tons of CO₂) of that of 2000. But the CO₂ emission quantity (basic unit) increased by 27.8% of that of 1990 with the decrease in production volume due to the recession within the semiconductor industry.
- The amount of discharged greenhouse gases (PFC gases) was reduced, in terms of global warming coefficient (Note 2), by 27% of that of 2000. Further activities are being conducted to achieve the target value.

(Note 2) Global warming coefficient: A numerical index resulting from the conversion of impact toward global warming, to the quantity of CO₂.

Efforts for Reducing CO₂ Emissions

Energy saving efforts were carried out focusing on semiconductor production plants which consume large amounts of electric power. Details of the energy saving measures are described below.

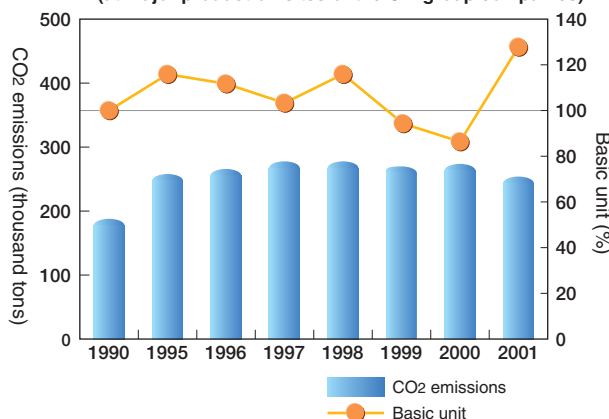
- Implementation of co-generation system.
- Upgraded facilities with highly efficient equipment (air conditioners, power receiving and converting facilities, etc.).
- Implementation of free cooling (outdoor air cooling) system.
- Modification of lighting, fans, and pumps into inverter types.
- Other measures (auto switch-off, thermal insulation of buildings, power supply cutoff for vending machines during nighttime, etc.).

Efforts for Reducing Greenhouse Gas (PFC Gas) Emissions

Perfluoro compound (PFC), which impacts global warming, is being used in the semiconductor manufacturing processes, and a part of the gas is emitted into the atmosphere. For this reason, the World Semiconductor Conference (WSC) set up a target for reducing the emission of PFC gases in 2010 by 10% compared to that of 1995, as measured in terms of global warming coefficient.

The semiconductor manufacturing divisions of Oki Electric are working towards achieving the WSC's target, through efforts such as the installation of exhaust gas treatment equipment and the improvement of manufacturing processes.

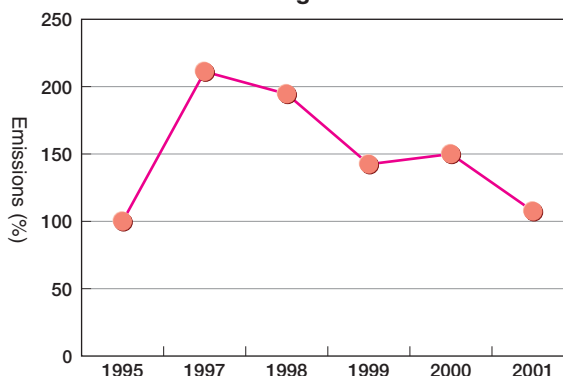
Transition of CO₂ emissions (at major production sites of the Oki group companies)



Installation of a co-generation system



Transition of PFC gases



Although chemical substances are indispensable in our daily lives, they can have a grave effect on the environment without proper control. Oki Electric is well aware of this fact and is therefore striving to limit the use of chemical substances.

Chemical Substance Control

Chemical substances used in manufacturing and included in products that have a great environmental impact are designated and are managed under the

classification of prohibited substances, suppressed substances and voluntarily controlled substances.

Chemical Substance Control

Classification		Number of substance types	Identification standard	Control method
Prohibited substances	Production activity	88	<ul style="list-style-type: none"> ●Substances prohibited for manufacturing by laws and regulations ●Substances which require manufacturing licensing by laws and regulations ●Voluntarily prohibited substances ●Others 	Prohibiting use in production activities and prohibiting inclusion in any products
	Products	90		
Suppressed substances	Production activity	91	<ul style="list-style-type: none"> ●Substances for which a reduction in use has been determined by laws and regulations (manufacturing prohibition period, etc.) ●Voluntarily suppressed substances 	<ul style="list-style-type: none"> ●Understanding of amounts used and contained ●Establishment and promotion of reduction schedule
	Products	93		
Voluntarily controlled substances	Production activity	390	<ul style="list-style-type: none"> ●All substances that are not included in categories of "prohibited substances" and "suppressed substances." 	<ul style="list-style-type: none"> ●Understanding of amounts used and contained
	Products	102		

Reduction of Substances Applicable for PRTR

The Pollutant Release and Transfer Register (PRTR) system is available as a means for understanding the discharge status of substances that present a great environmental impact. A law concerning the execution of the PRTR system was proclaimed in July 1999 and the first reporting based on this law started in April 2002.

Oki Electric commenced activities to engage in the

PRTR system in 1997 prior to the enactment of this law, in accordance with the guidelines provided by the Electrical and Electronics Industry Association. The discharge of PRTR designated substances was reduced by 29% in 2001 when compared to that of 2000.

2001 Records of PRTR Activities

(tons)

Chemical substance name	Usage quantity	Discharged amount				Transfer amount	
		Release to atmosphere	Release to public water	Release to ground	Total	Amount transferred as waste materials	Amount transferred to sewage
Hydrogen fluoride and its compounds	103.51	0.36	0.40	0	0.76	35.50	0.02
Xylene derivatives	36.29	8.38	0	0	8.38	27.91	0
2-amino ethanol	18.39	3.31	0	0	3.31	15.08	0
Formaldehyde	8.17	0	0	0	0	1.37	0
Water-soluble copper salt (excluding complex salts)	4.03	0	0	0	0	0.25	0
Toluene	3.57	2.45	0	0	2.45	1.12	0
1-1-dichloro-1-fluoroethane	3.30	3.30	0	0	3.30	0	0
N-N-dimethylformamide	3.28	0.59	0	0	0.59	2.69	0
Nickel compounds	3.02	0	0	0	0	0.71	0
Lead and lead compounds	2.96	0	0	0	0	0	0
Pyrocatechol	2.29	0.41	0	0	0.41	1.88	0
2-ethoxy ethyl acetate	1.57	0.26	0	0	0.28	1.29	0
Monoethanolamine	1.19	0.21	0	0	0.21	0.98	0
2001 total	191.57	19.29	0.40	0	19.69	88.78	0.02
2000 total	283.20	27.10	0.63	0	27.73	92.91	0.03

Reduction of chemical substances included in products that have an environmental impact

Chemical substances included in materials and parts that comprise products must be reduced in order to lower the chemical substances that have an environmental impact.

Oki Electric is promoting a reduction of these chemical substances by replacing parts and materials that have an environmental impact with non-impacting parts and materials.

Examples of reduction in environmentally impacting chemical substances included in parts and materials

Name of chemical substance	Parts/materials containing this substance	2001 activity results
Polyvinyl chloride (PVC)	Telephone cables	Evaluation of switching to alternative cables completed.
	PVC coating for metal parts	Switching to polyester coatings.
	PVC steel sheets	Switching to polyolefin steel sheets.
Sexivalent chrome	Chromate treated steel sheets	Evaluation of switching to alternative steel sheets completed.
Lead	Solder	Lead-free solder is being evaluated, and has been applied to some products.

Establishing a mass production system for printed circuit boards containing lead-free solder

Ordinary electronic products contain components using lead solder that is used to solder LSI pins to a printed circuit board. When such products are disposed of, the toxic lead contained in the solder is often dissolved by acid rain, and spills out into the environment. Studies have been conducted concerning the application of solders that do not contain lead (lead-free solder). In 2001, Nagano Oki Electric succeeded in establishing a mass production system for printed circuit boards with lead-free solder.

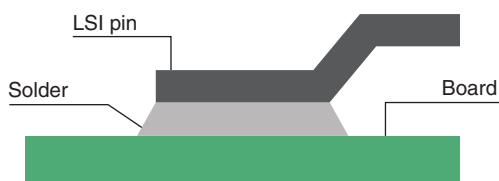
By 2000, Nagano Oki Electric completed the implementation of reflow soldering (shown in Figure 1) equipment used primarily for surface mounting. In 2001, the company newly introduced flow soldering equipment (shown in Figure 2), completing the establishment of an overall mass production system.

Tin (Sn), silver (Ag), and copper (Cu) based materials were adopted as material components of the lead-free solder, which are the key components for promoting the elimination of lead in solders, based on material evaluation and mounting reliability evaluation. These Sn-, Ag-, and Cu-based materials have a melting point about 30°C higher than that of the conventional solder materials, which influences the thermal resistance characteristics of parts and printed circuit boards. Their use has been made possible through the implementation of ovens that

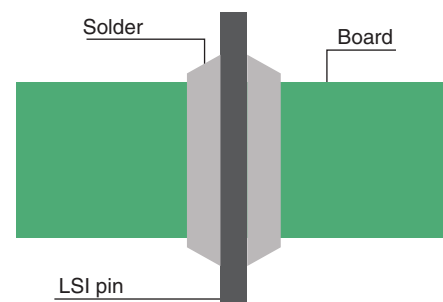


provide a uniform internal temperature and by establishing a soldering technology in a nitrogen environment. Oki Electric is planning to totally eliminate lead-containing solders for all domestically manufactured products by the end of 2003.

(Figure 1) An example of reflow soldering



(Figure 2) An example of flow soldering



In order to prevent environmental pollution such as air pollution and water pollution, Oki is conducting activities leading to the reduction of environmental pollutants, including periodic measurement/inspection and facility maintenance, as well as personnel training to deal with emergencies.

Prevention of Air Pollution

Dioxin is a toxin which may cause carcinogens and teratogenic substances to be produced which are harmful to humans and animals. It is believed that dioxin is produced mostly by waste disposal incinerators and is regulated by the Air Pollution Control Law. The Oki group eliminated all waste disposal incinerators in 1999 as a part of our efforts to counter these problems.

The waste which was incinerated in the past is now reduced in volume through the use of crushing machines, and materials are being recycled whenever possible.

Soil and Ground Water Contamination Problems

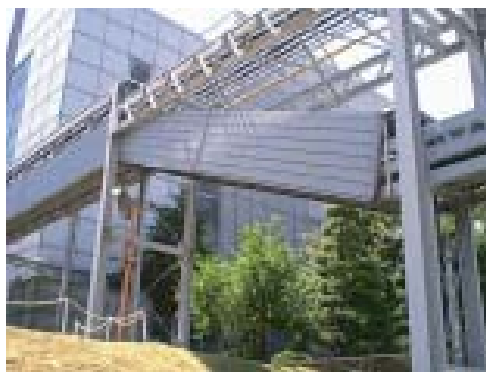
Contamination of soil and ground water caused by organic chlorine compounds has been attracting a lot of public attention in recent years. The Oki group has already entirely eliminated the use of 1,1,1-trichloroethane, tetrachloroethylene, trichloroethylene, and dichloromethane.

In order to check the effects of the use of these substances in the past, we investigated soil and ground water contamination and are conducting periodic inspections.

Measures Taken to Prevent Abnormal Incidents from Occurring

Accidents involving the leaking of chemical substances may occur due to natural disasters, fire, malfunction of facilities, or human error during operation of equipment. To prevent the leakage of chemical substances, we are conducting the following:

- (1) "Guidelines for procedures in the event of emergency" has been created and personnel are trained according to the guidelines.
- (2) Chemicals are stored in cases. A tray is put at the bottom of each case to prevent the chemicals from leaking. A maximum height to which the cases can be stacked is also specified and regulated.
- (3) Liquid waste processing tanks are encased in concrete for unforeseen leakage. The tanks and pipes are installed above ground for visible inspection.



Pipes are installed above ground

Responding to Complaints

There were no fines or penalties imposed in 2001. However, we did receive one complaint about noise from residents in the neighborhood. In order to respond to this complaint, we made an investigation to locate the source of the noise, which was the boiler noise resonating in the chimney. Soundproofing construction was immediately conducted to resolve this problem.

Soundproofed chimney



Environmental Protection in Distribution

The process which involves all the stages ranging from production to the delivery of a product is called “distribution.” The following two environmental impacts arise from this process:

- Environmental impact relating to product packaging
- Environmental impact relating to product transportation

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

Activities for Reducing Environmental Impact for Packaging

The impact on the environment represented by packaging arises from the emission of CO₂ and the discharge of waste materials during the manufacturing and disposal processes of packaging materials. In order to reduce this environmental impact, we are engaged in product design while taking into consideration re-use, the reduction and recycling of materials, and the replacement of materials with more eco-friendly materials. Examples of these efforts are described below.

■ Resource-saving packaging

Resource-saving packaging is being carried out to reduce the amount of packaging materials used. An example of this is the simple packaging (bare packaging) used for equipment delivered to financial institutions. This is a simplified packaging method where a product is covered with only a polyethylene bag which protects the product from dust and scratches. During transportation, such products are secured on all sides with protective materials to prevent scratches.

■ Replacement of wooden pallets with corrugated cardboard pallets

A pallet is a load-carrying platform used for carrying goods by forklift truck or the like. Wooden pallets are heavy, burdensome to handle, and are incinerated as waste materials as they are difficult to recycle. We started using pallets made of corrugated cardboard as replacements for wooden pallets. Corrugated cardboard pallets provide less strength compared to wooden pallets, but can be treated like any other ordinary corrugated cardboard in the disposal process.



Activities for Reducing Environmental Impact for Transportation

CO₂ and sulfur oxide (SO_x) gases, discharged as exhaust gases by trucks and other vehicles, comprise the majority of environmental impact caused by transportation. In order to reduce such impact on the environment, we studied alternatives such as a modal shift from truck transport to railroad transport, enhancing transport efficiency by bulk transportation, and the improvement of loading rate. Examples of these measures are described below.

■ Modal shift from truck transport to railroad transport

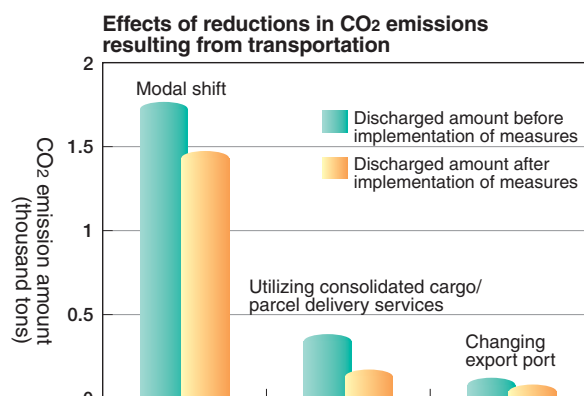
Promoted a switch to transportation by railroad with higher fuel consumption efficiency.

■ Utilizing consolidated cargo delivery services and parcel delivery services for small lots

Improved loading efficiency by using consolidated cargo (mixed loading) delivery services and parcel delivery services.

■ Reduction of transportation distance by changing ports for product exports

Changed ports for exporting products to reduce the transportation distance and improve loading efficiency.



It is important for an environmental management system to publish environmental information in a positive manner so that opinions and feedback can be collected from people within and outside the company, and to promote continued improvements of the system. For this reason, environmental information is being published in various ways.

Issue of Environmental Report 2001

“Environmental Report 2001” was made available on Oki’s web site to introduce the way in which the Oki group is conducting environmental protection programs and activities for people within and outside the company. Both Japanese and English versions are available, and these provide information of environmental efforts at Oki, centered on the results of such efforts.

The scope of our environmental accounting data was expanded including efforts in distribution and safety audits in addition to other items already included in the Environmental Report 2000.



Publication of Environmental Reports for Six Oki Sites

“Site Environmental Reports” providing summaries of detailed environmental efforts and results at six Oki sites were prepared and made available on the Oki’s web site: (<http://www.oki.com/jp/Home/JIS/Profile/ECO/2001/top.html>).

The reports are intended to publish detailed information, such as environmental impact data compliant with the local regulations and unique environmental efforts at individual production plants, to residents of the local communities as well as local governments in order to seek their understanding.

Reports of the following six districts were disclosed this time:

- ◆ Hachioji District (Hachioji City, Tokyo)
- ◆ Tokyo/Makuhari District
(Minato-ku, Tokyo and Mihama-ku, Chiba City)
- ◆ Takasaki District (Takasaki City, Gunma Prefecture)
- ◆ Tomioka District (Tomioka City, Gunma Prefecture)
- ◆ Honjo District (Honjo City, Saitama Prefecture)
- ◆ Numazu District (Numazu City, Shizuoka Prefecture)

Site environmental reports of the Oki group companies are planned to be published starting in 2002.

Exhibitions and Lectures

■ Lectures on the recycling of ATMs

Lectures on the recycling of automated teller machines (ATMs), intended for corporate and student audiences, were given at the “Seventh Environmental Symposium for Electronics Assembly” (in Osaka and Tokyo) sponsored by the Japan Welding Society.

■ Product exhibition at “Miyagi limono Techno Fair”

Oki Environment Technologies Inc. exhibited their automated ion monitoring equipment “Suimonban®”, which enables real-time remote monitoring of water quality using a personal computer, at the “Miyagi limono Techno Fair 2001.”

■ Lecture on “lead-free mounting technology”

A lecture on Oki’s technologies and efforts for lead-free mounting of electronic components on printed circuit boards was given at the technology seminar session sponsored by the Magazine House.

■ Participation in the “Environmental ISO Certified Site Exhibition”

The “Environmental ISO Certified Site Exhibition” sponsored by Numazu City was held at “Numazu Kira Messe” in January 2002. The Oki Electric Numazu District participated in this event and introduced examples of their environmental efforts.

Social Contribution Activities

Nature Preservation Activities

The year 2001 marked the 120th anniversary of Oki Electric.

At the Oki group, we initiated the "Volunteer Once a Year" activity for the occasion of this 120th anniversary, and are promoting participation by every employee in some kind of volunteer activity at least once a year. Some of the environmental volunteer activities held at various districts of Oki Electric are introduced below.

Major cleanup operation in Sendai

A total of 73 employees and their family members (including 8 children) from the Oki group companies located in Sendai City carried out a cleanup operation. They picked up trash at various locations inside the city, as well as in the Nishikoen Park which is a place of recreation and relaxation for the citizens. While drizzle poured down from the sky, the participants pleasantly completed their tasks.

Participation in "Izu Oshima Hometown Forestation Arbor Day"

Members of the Oki group companies participated in the "Izu Oshima Hometown Forestation Arbor Day" festivities sponsored by the Metropolitan Government of Tokyo and the Town of Oshima. This festival targeted participation by 5,000 people and the planting of 50,000 trees. On November 1, the very day of the 120th anniversary of Oki Electric, eight members of the Oki group gathered after work at Takeshiba Pier to participate in the planting festival which was to be held the next day. Each member planted more than ten trees within about one hour.

Tree-thinning by "Oki Cooperative Team for Mountains and Greenery" at Naka Izu

A total of 25 members and their families of the Oki group companies in the Numazu and Tokyo Districts participated in tree-thinning activities held in the public forests of Naka Izu Town. The area was heavily covered by cedar and Japanese cypress trees, which almost entirely covered the sky with their leaves and branches. If these trees were left in that condition, they would not grow thicker, and would be more likely to fall down due to wind or snow. Tree-thinning, therefore, was necessary. Two days were required for the operation with an overnight stay at the location.



When pushing a tree does not work, then pull it with a rope...

"Making the Horikawa River clean again," a volunteer activity involving concerted cleanup efforts

Oki group members from the Chubu District (Nagoya City) and their family members participated in the concerted Horikawa River cleanup efforts by volunteers, in order to show their gratitude to the people of the local community who embraced them over many years. On the fine fall day, the 125 people including children put in a good effort with green garbage bags in their hands, pulling out weeds and picking up trash.

Cleanup of the seashore in the vicinity of the Itsukushima Shrine in Hiroshima Prefecture

On July 20 (Marine Day in Japan), volunteers conducted a cleanup operation on the seashore in the vicinity of Itsukushima Shrine. Participants from the Oki group companies numbered 89 in all (including 19 family members). The sky was clear on that day with the temperature peaking at 33.4 degrees Celsius. The water surface was completely occupied by the inveterate foe "sea lettuce." All of the sea lettuce was collected and eradicated in the area between the shrine and the main gate (Torii) of the shrine.

Keep our town clean, with our hands!!

Volunteers from the Oki group companies participated in a "Concerted Cleanup of Chuodori Avenue of Takamatsu City" activity. Participation required engaging in activities before work on the day, but seven volunteers managed to clean up the Chuokoen Park near Oki Electric and pedestrian walk in front of the park. Since the "Takamatsu Matsuri" festival took place just the day before, there was plenty trash left perhaps by the participants of the festival, requiring a lot of effort but also making it all quite worthwhile.

Supporting Environmental NGOs

Oki Electric is supporting the following environmental non-government organizations (NGOs):

- Nature Conservation Society of Japan
- Green Earth Center
- Morizukuri (forestation) Forum
- Ecosystem Conservation Society-Japan (Co-sponsorship in All-Japan School Biotope Contest)

External Awards

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

Date	Recipient	Award and citation name (sponsor)	Reasons for receiving award/citation
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

■ Miyagi Oki Electric was awarded "Superior Energy Control Plant Award" by the Minister of Economy, Trade and Industry.

Miyagi Oki Electric is a semiconductor manufacturing company. Semiconductor manufacturing plants consume more energy compared to general manufacturing plants. The company earnestly tackled energy-saving measures such as the introduction of a free cooling (open-air cooling) system. As a result, the company was awarded the "Superior Energy Control Plant Award" by the Minister of Economy, Trade and Industry in February 2002.

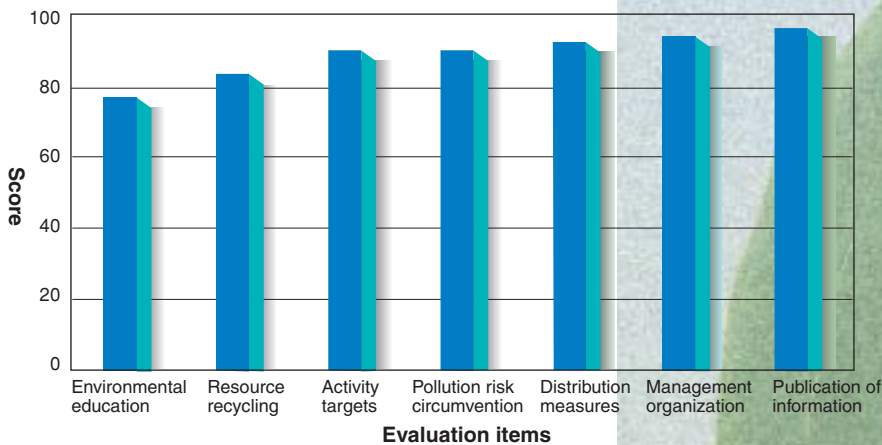


Newly installed cooling tower for free cooling

Results of Self-Evaluation of 2001 Environmental Protection Activities

The results of self-evaluation of our environmental protection activities for 2001 are provided below. Items with low scores will be addressed by implementing measures in our 2002 (April 1, 2002 through to March 31, 2003) activity programs.

Results of Self-Evaluation for 2001 (100 points maximum)



Issues for 2002

Environmental education for all employees of the Oki group companies

- Conduct environmental education intended for all employees through “e-learning.”
- Implement an Environment Month and plan environmental events.

Promotion of resource recycling

- Attain zero emission at our plants and divisions.
- Improve recycling rate of used products.

Clarifying activity targets

- Set “Eco Plan 21” targets for each year.

Maintain pollution risk management organization

- Periodically track soil pollution risks and formulate procedures for handling relevant information.
- Establish management standards to comply with the enactment of soil pollution legislation.
- Fortify control of environmental pollutants and reduce their discharge quantity.

Thank you very much for reading our Environmental Report 2002.
Please feel free to contact us for any opinions or inquiries.

OKI

Oki Electric Industry Co., Ltd.

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