

# Environmental Conservation



**In order to realize and pass on a better global environment, the Oki Group promotes environmental management and makes efforts to conserve the environment through its products and its business activities.**

## The Oki Way

Under its concept of companywide network-type environmentally-conscious management, the Oki Group will supply eco-friendly products and services, conserve resources and energy through its business activities, and reduce waste. While implementing its environmental management system effectively, the Oki Group will also contribute to the society on a broad basis by disclosing environmental information and supporting environmental activities.

## Oki Group Environmental Policy

In November 2004 the Oki Group adopted the Oki Group Environmental Policy. The policy calls for positive and sustained efforts targeted toward the “three pillars” of environmental activities, leading to the fulfillment of the Oki Group’s

responsibility to contribute to global environmental conservation as a member of the recycling society through initiatives based on companywide network-type environmentally-conscious management under the new environmental policy.

### “3 Pillars” of Our Environmental Activities

- 1 Contribution to the environment through products**  
Creation of eco-friendly products
- 2 Contribution to environmental conservation in business activities**  
Energy and resource conservation, zero emissions, reduction of chemical substances, risk management
- 3 Contribution to environmental activities of society**  
Environmental volunteer activities, support for environmental activities



### Oki Group Environmental Policy

#### Environmental Policy

**By providing products that contribute to the e-society, the Oki Group realizes a better global environment for the next generation, and takes it over.**

#### Environmental Activity Guidelines

- 1 Strive to maximize the effect of policies and measures by executing companywide network-type environmentally-conscious management.**
  - Work to provide eco-friendly products and services with respect to all work processes, from product planning up to manufacturing, maintenance and operation.
  - Work for the conservation of resources and energy, and to reduce waste in business activities.
- 2 Comply with applicable environmental laws and regulations, ordinances, etc. and other requirements agreed upon.**
- 3 Accurately execute the PDmCA (Plan-Do-multiple-Check-Action) of the environmental management system. Work to enhance environmental performance and to continually improve its operational system.**
- 4 Strive to disclose environment-related information and contribute to society on a broad basis by supporting environmental activities.**

## Companywide Network-type Environmentally-conscious Management

The Oki Group's concept of companywide network-type environmentally-conscious management is designed to optimize the efficiency of group-level activities by combining day-to-day energy conservation activities and other initiatives at individual sites with company-level efforts focusing on product-related environmental themes.

By modulating its environmental activities according to the theme, by selecting and concentrating resources toward the

solution of problems, and by sharing information and knowledge, the Oki Group is working to create environmentally sound products that minimize environmental loads, and to ensure that its business activities are compliant with environmental requirements. Its goal is to maximize the benefits of these efforts by avoiding duplicated investment in environmental countermeasures.

## Environmental Conservation Activity Program "Oki Eco Plan 21" and Its Progress

In 1999, the Oki Group launched Oki Eco Plan 21 as its basic plan for the reduction of environmental loads through environmental activities. Environmental protection activities under the plan are guided by medium-term and yearly targets. The table below lists the results for each activity category under Oki Eco Plan 21 in the year ended March 2005. Though there

were increases in emissions of greenhouse gases and chemicals with the potential to affect the environment, the results are largely on target when increased production volumes are taken into account. These results are reflected in new measures included in the year ending March 2006 version of Oki Eco Plan 21, and in activities based on the plan.

### Oki Eco Plan 21 Activity Items and Achievements in the Year Ended March 2005

Category		Activity Item		Achievements in the Year Ended March 2005
Products	Complete elimination of chemical substances that affect the environment	Complete elimination of substances subject to the RoHS directive*		Elimination from major products
	Resource recovery from used products	Development of internal recycling system and enhancement of efficiency		Resource recovery ratio: 89.6%
Business Activities	Prevention of global warming	Reduction of production-related CO <sub>2</sub> emissions	Electronic devices	Basic unit compared to the year ended March 2004: 12% decrease
			Information and telecommunications equipment	Basic unit compared to the year ended March 2004: 18% decrease
	Reduction of greenhouse gas (PFC gas) emissions		Change from the year ended March 2003 level resulting from higher production volumes: 58% increase	
	Resource recycling	Reduction of waste		Resource recovery ratio: 99.3%
Limitation of use of chemical substances that affect the environment		Limitation of emissions and use of chemical substances that affect the environment (restricted chemical substances other than greenhouse gases)		Change from the year ended March 2002 level resulting from higher production volumes: 16% increase
Environmentally-conscious management	Reinforcement of environmentally-conscious management systems	Promotion of companywide network-type environmentally-conscious management		Acquisition of companywide consolidated ISO14001 certification in March 2005
	Reinforcement of environmental compliance	Education on environment-related laws and regulations		Number of sales division employees participating in e-learning on environmental laws and regulations: courses completed by 757 of 810 eligible employees (93%)

\*RoHS Directive: Restriction of the use of certain Hazardous Substances in electrical and electronic equipment. European Union (EU) members will enforce the regulations from July 1, 2006, resulting in a ban on the use of six substances: lead, mercury, cadmium, hexavalent chromium, PBB (polybrominated biphenyls) and PBDE (polybrominated diphenyl ethers).

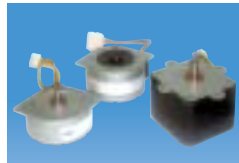
## Environmental Conservation

### Complete Elimination of Substances Covered by RoHS Directive

Under the RoHS Directive, which restricts the use of certain chemical substances in electrical and electronic equipment, the EU will prohibit the sale of products containing any of the six substances listed in the Directive from July 2006. The Oki group is working toward the complete elimination of the substances listed in the RoHS Directive.

#### Strengthening the Production Organization

The Oki Group has configured its production systems for mechatronic products, which contain large numbers of parts, to eliminate all substances listed in the RoHS Directive. Oki sells a high percentage of its printers in EU member states, and Oki Data Corporation has assembled a working group of design and sales staff to formulate the necessary measures and is currently reconfiguring its production systems. Oki Micro Engineering Co., Ltd., which develops and manufactures motor solenoids, has already eliminated all RoHS substances by using lead-free solder in the core product area of stepping motors, and by terminating the use of hexavalent chromium in electroplating processes, including those in overseas plants.



Stepping motors

#### Switching to Lead-free Solder

In the year ended March 2004, the Oki Group completed the transition to lead-free circuit boards for newly designed products manufactured in Japan. Mass-production commenced in the year ended March 2005, following the completion of evaluations of lead-free products supplied by overseas vendors. The elimination of lead from semiconductor packages and

optical module components was completed in the year ended March 2003 at all production facilities, including overseas plants. Oki Sensor Device Corp. completed the elimination of lead from its entire range of reed switches in the year ended March 2005.



Printed circuit board



Semiconductor package

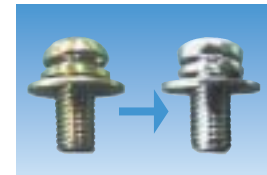
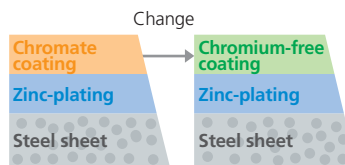


Reed switches

#### Eliminating Hexavalent Chromium

The zinc-plated steel sheet used in information processing and electronic telecommunications equipment contains minute amounts of hexavalent chromium in the chromate coating. The Oki Group completed the transition to steel sheets treated with a chromium-free process at its domestic sites by the end of the year ended March 2003, and at all production facilities in China, its main overseas production base, in the year ended March 2005. Hexavalent chromium was also eliminated from the screws used in mechatronic products in the year ended March 2005.

#### Structure of Chromium-free Steel Sheets



Screws with hexavalent chromium and screws with trivalent chromium

### Green Procurement

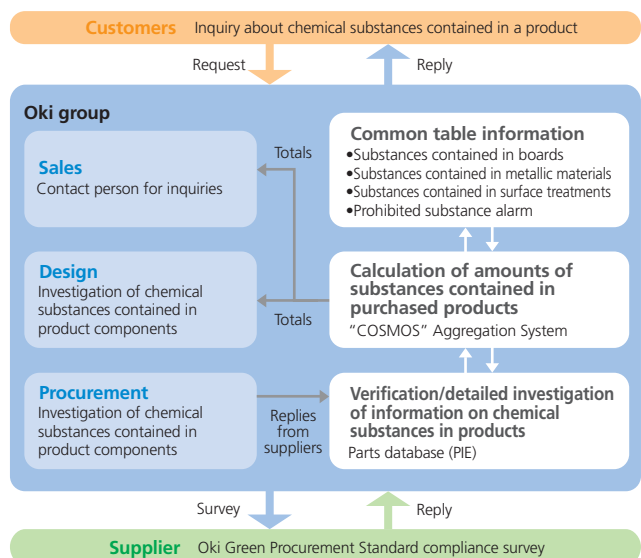
Oki has published Oki Green Procurement Standard since the year ended March 2003 as the basis for preferential purchasing of parts and materials containing reduced amounts of chemicals that can affect the environment. Environmental load substances contained in parts purchased by Oki are recorded in Oki's green procurement database. By the year ended March 2005, the number of items in this database had reached 45,384, an increase of 5,000 over the previous year's level.

Information about chemicals contained in products is stored in the COSMOS information system. In the year ended March 2005, Oki began to share and operate this system across the entire Oki Group. This system allows Oki Group companies to share data about substances contained in parts purchased under the green procurement system. It also reduces the time required to prepare statistics on the total amounts of these substances, and enables us to respond promptly to inquiries from customers.



Green Procurement Standard

#### Investigation Flowchart and Information System for Chemicals Contained in Green Procurement Products

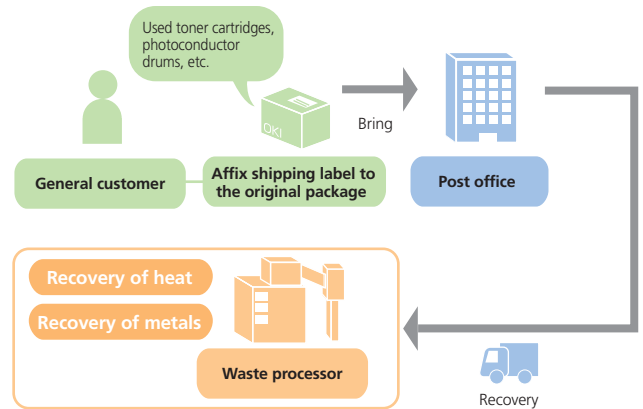


## 3R Activities for Used Products

Effective resource utilization, and the reduction of waste product and final disposal volumes are all essential to the creation of a sustainable society. The Oki Group is contributing through "3R" (reuse, recycle, reduce) activities targeting used products. In the year ended March 2005, Oki introduced a full-scale collection and recycling program for ATMs, as a "Cross-jurisdictional Waste Treatment Manufacturer". Each year Oki collects 6,000-8,000 used ATMs and reuses parts from these machines. In the year ended March 2005, it collected 3,103 tons of used products, especially ATMs. The recycling ratio in the Kanto region, where collection volumes are high, reached 89.6%, significantly higher than the target ratio of 85%.

Oki Data Corporation has introduced a free waste-recycling program for users of Oki color printers in the EU. Used consumables, such as toner cartridges and photoconductor drums, are collected through sales companies. Oki Data aims to increase collections to 70% of sales volumes by the year ending March 2008.

### ● Recycling Program for Consumables in Europe



## Working to Prevent Global Warming

The Oki Group is working to reduce its emissions of the greenhouse gases that cause global warming. It has set targets for the reduction of energy-related CO<sub>2</sub> emissions resulting from the consumption of electric power and fossil fuels, and emissions of PFC (perfluorocarbon)\*<sup>1</sup> gases used in the semiconductor manufacturing process.

### Reduction of Energy-related CO<sub>2</sub> Emissions

In the year ended March 2005, total energy-related CO<sub>2</sub> emissions by the Oki Group, including overseas plants, increased by 28% year-on-year to 389,000 tons. The increase reflects higher production volumes. In terms of basic units\*<sup>2</sup>, segment CO<sub>2</sub> emissions at major production sites improved by 12% year-on-year in the case of semiconductor (electronic devices) manufacturing operations, and by 18% in the case of assembly operations (information and telecommunications devices). Contributing factors included energy conservation activities, productivity improvements, and higher sales.

An example of an energy conservation initiative that helped

to reduce energy-related CO<sub>2</sub> emissions was the installation of an energy-efficient high-speed air washer by Miyagi Oki Electric Co., Ltd., which manufactures semiconductors. This system replaced an air conditioning system that was used to clean external air supplied to clean rooms and adjust its temperature and humidity. This change will reduce energy consumption by 20% and annual CO<sub>2</sub> emissions by 290 tons. The Oki Group plans to achieve further reductions in CO<sub>2</sub> emissions by making similar changes the air conditioning systems at other plants.



High-speed air washer

\*<sup>1</sup> PFC gases: CF<sub>4</sub>, C<sub>2</sub>F<sub>6</sub>, etc.

\*<sup>2</sup> Basic units: CO<sub>2</sub> emissions/net sales

## Reduction of Waste (Zero Emissions)

Since the year ended March 2001, Oki has been working to achieve zero emission\*<sup>1</sup> status at its main production sites. The Waste Reduction Promotion Working Group has coordinated the sharing of information that is applicable to all sites, while individual sites have worked to improve specific aspects of their operations, such as the processing of industrial waste. As a result of these efforts, Oki achieved zero emission status at its main domestic production sites in the year ended March 2003.

Oki Power Tech Co., Ltd., a group company specializing in the development and manufacture of power supply units, achieved zero emission status in the year ended March 2005. The Oki Group, including overseas companies, will continue to target further improvements in resource recovery rates\*<sup>2</sup>.

\*<sup>1</sup> Zero emission status: This is defined by the Oki group as a resource recovery rate of more than 99% for general waste and industrial waste.

\*<sup>2</sup> Resource recovery rate: Quantity of recovered resources/(quantity of recovered resources + quantity of final disposals at landfills) x 100

Environmental Conservation

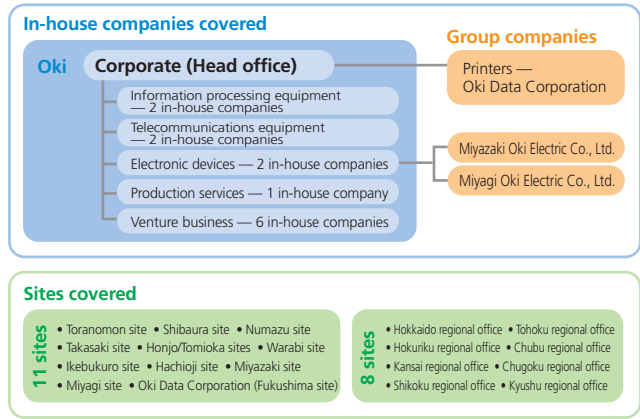
Acquisition of Companywide Consolidated ISO14001 Certification

On March 30, 2005, Oki implemented companywide network-type environmentally-conscious management (see page 30) by obtaining companywide consolidated ISO14001 certification by the Japan Audit and Certification Organization for Environment and Quality (JACO), and by establishing an environmental management system encompassing all business processes from planning to manufacturing. The consolidated certification covers 11 sites, eight branches and 59 Oki Group companies in Japan (Oki Data Corporation, Miyazaki Oki Electric Co., Ltd., Miyagi Oki Electric Co., Ltd. and on-site affiliated companies). The Oki Group plans to expand the scope of certification to include overseas Oki Group companies, and to extend the coverage of its companywide network-type environmentally-conscious management.



Registration certificate

● Scope of Consolidated Certification



Environmental Compliance and Environmental Education

e-learning for Sales Personnel

In the past, the environmental compliance efforts of the Oki Group have centered mainly on production and design operations. In the year ended March 2005, it introduced an e-learning program to educate sales personnel, who are the point of contact between the Oki Group and its customers, to strengthen compliance with environmental laws and regulations. The program, which was completed by 93% of eligible staff, examined specific scenarios based on sales operations and was designed to teach participants about waste disposal methods and the appropriate implementation of product recycling systems under the wide-area industrial waste designation scheme.

Oki Month of Environment

As part of its efforts to raise awareness of environmental protection among its employees, the Oki Group has designated June each year as “Oki Month of Environment” Activities include in-house broadcasts of messages from the President, and poster displays. Individual sites conduct energy conservation programs and community cleanup campaigns, and the results of these were posted in the company newsletter. In the year ended March 2005, a poster titled “Announcement of the Oki Electric Environmentally-Conscious Management” was created to raise awareness of companywide network-type environmentally-conscious management.



Poster to announce environmentally-conscious management at Oki Electric

Environmental Communication

The Oki Group undertakes a variety of environmental communication initiatives to canvas the views of people within and outside of the Group. Ideas and information gained in this way are used in the ongoing improvement of environmental management systems.

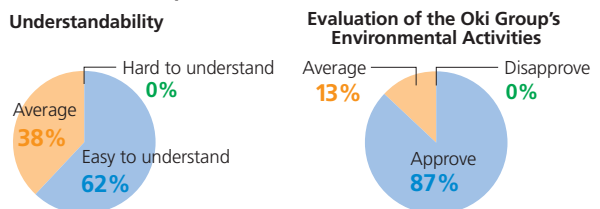
Oki Environmental Report

Oki has published the “Oki Environmental Report” every year since the year ended March 2000 to inform all stakeholders about the environmental activities of the Oki Group. Results from a questionnaire survey included in the report for the year ended March 2005 showed that approximately 90% of respondents approved of the Oki Group’s environmental activities. However, some respondents also indicated that more space in the report should have been devoted to efforts to reduce CO2 emissions and information about CSR.

Oki Group sites also produce site environmental reports to inform local residents and local government organizations about environmental initiatives that reflect the particular characteristics of their local activities. These reports are published on the Oki website. In the year ended March 2005, Oki (Thailand) Co., Ltd.,

which manufactures semiconductor chips, became the first overseas site to produce a site report.

● Environmental Report Evaluation



Supplier Briefings

Every year Oki holds a Parts and Materials Cooperation Meeting. At the current year’s meeting, it briefed major suppliers about the Oki Green Procurement Standard and efforts to comply with the RoHS Directive.



Parts and Materials Cooperation Meeting

## Oki Environmental Seminar

In the year ended March 2005, Oki held the Oki Environmental Seminar in Hachioji City, Tokyo, where one of its sites is located. The seminar was sponsored by Cyber Silkroad Hachioji, an organization established to promote Hachioji as a special information industry zone for the Tokyo Metropolitan Area. The themes for the seminar were measures to deal with specific hazardous substances, and product-related environmental measures. Oki demonstrated its control system for chemical

substances contained in products. There were also lectures concerning examples of eco-friendly design and technology for the manufacture of circuit boards using lead-free solder. After the lectures, there were numerous comments and questions from representatives of companies that are planning similar activities and measures.



Oki Environmental Seminar

## Development of Eco-friendly Products

The Oki Group aims to minimize the environmental impact caused by the products that it supplies by assessing its products at all stages from development and design onwards according to criteria that include energy and resource conservation, recyclability, and reductions in the use of chemical substances.

### Color LED Printer — MICROLINE5400

The MICROLINE5400 is a full-color high-speed A4 page printer based on Oki Data's LED technology. It is smaller and lighter than laser printers and has fewer mechanical parts. Toner



MICROLINE5400

cartridges and other consumables are also smaller, lighter and easier to recycle than those used on earlier models. Another advantage is the reduction in power consumption during both operation and standby. The printer also has features, including multi-page printing, that help to reduce the amount of paper used.

### IP-PBX — IPstage EX100

The IPstage EX100 is an internal switch capable of accommodating up to 512 IP phones. By integrating the circuits for common components, Oki was able to reduce power

consumption; while the use of more sophisticated circuit boards reduced the number of boards and improved recyclability. Oki also reduced the external dimensions of the chassis by increasing the density of the circuitry. The chassis is made from chrome-free steel sheet, and the covers from PVC-free olefin steel sheet.



IPstage EX100

### Real Time Clock (RTC) with Automatic Time Correction — ML6191

The ML6191 is a one-chip LSI for use in radio controlled clocks and watches. By using fully-depleted silicon-on-insulator (SOI)-CMOS technology, Oki was able to achieve high-speed operations while reducing power consumption by one-half compared with earlier products. When combined with a solar power cell, the ML6191 can be used to create watches and clocks that never need new batteries. The lead-free design of the ML6191 helps to reduce the use of toxic chemicals. The only connections required are for the antenna, condenser and crystal. This simple structure reduces the mounting area required.



ML6191

## Developing Eco-friendly Environmental Protection and Production Equipment

Another focus for the Oki Group is the development of technology for environmental protection and production equipment that will contribute to environmental conservation.

### New Space-saving High-speed Bio-cleaning System for Waste Liquid

Oki Environment Technologies Inc. has developed equipment to treat waste liquids through the use of a biofilm process in combination with high-pressure pure oxygen treatment. The equipment is about one-third the size of earlier systems and can be installed in a space roughly the size of a car. It is used to treat waste liquid from semiconductor and printed circuit board plants and other sources. Because the new system produces less sludge than earlier products it also helps to reduce waste.



Waste Liquid Treatment System

### Resource-efficient Screen Mask Washer with Rinsing Function

Oki Communication Systems Co., Ltd. has developed the ACT300 Series of screen mask washers with a rinsing function. These systems are used to remove paste that adheres to metal masks (screens) when circuits and marks are printed onto printed circuit boards. The mask is positioned vertically, and a high-pressure spray is directed only onto areas that are soiled. This method halves the amount of cleanser used and extends the life of the screens. The addition of a rinsing function has reduced the frequency of solution replacement, since the cleanser can be recycled up to its maximum limit.



ACT300 series