



# Fiscal 2003 Topics

In addition to reducing environmental impacts from business activities, Oki engaged in various efforts to promote the development of products that solve environmental problems (products contributing to the environment), and business reforms. The main topics of these efforts are presented below.

## Contribution to the Environment through Products

### Reducing environment-affecting chemical substances contained in products

Oki takes a variety of approaches to reduce chemical substances contained in its products.

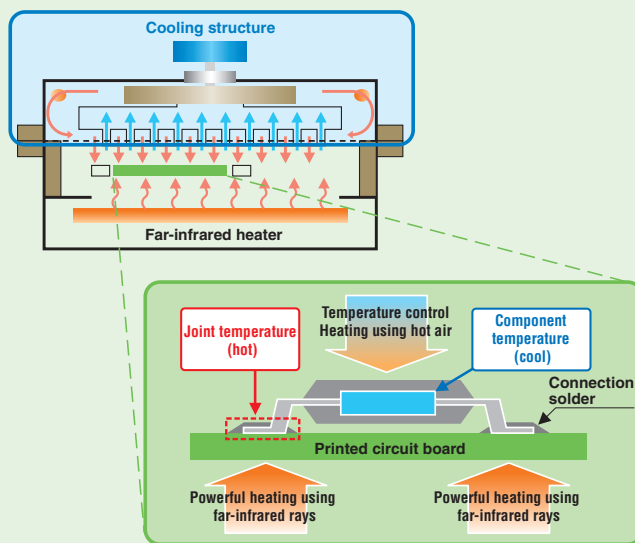
#### Efforts for Lead-free Solder

##### Joint development of "new technology for lead-free soldering" with Furukawa Electric Co., Ltd.

Together with Furukawa Electric, we developed "Component Temperature Control Reflow\*1) Technology", a new heating technology that allows automatic soldering of heat-sensitive electronic components using ordinary lead-free solder with a high melting temperature. With the new method, old designs and components can be switched to lead-free solder consisting of tin, silver and copper without having to change the manufacturing process and at low cost. Solder made of tin, silver and copper is the most commonly used type at present and well proven in practice.

\*1) Reflow: A method of printing semi-fluid solder onto an electronic circuit board, mounting the components, applying heat and then soldering the components to the board. Because of this, automatic heat-soldering equipment is called "reflow furnace".

##### Structure of a Reflow Furnace with Component Temperature Control



#### Heating Methods

- ◆ Heating using hot-air → A characteristic of this method is that heat is applied evenly. Since this means that the component temperature rises together with the joint temperature, the method could not be used to solder heat-sensitive components.
- ◆ New heating reflow → thinking the other way round, we combined two different heating methods —hot air and far-infrared rays— and added a cooling structure to the upper heater. Through this, we succeeded in heating the joint and the component to different temperatures, enabling automatic soldering of heat-sensitive components.

Field		New heating reflow of Oki	Hot-air circulation reflow of others
Reflow soldering component	Existing components Heat resistance: 230°C	OK	NG
	Parts supporting lead-free soldering Heat resistance: 250°C	OK	OK
Characteristics		Existing components (components from existing designs) can be used	To use existing components, the following is required. ① Switch to components supporting lead-free soldering ② Manual soldering ⇔ Higher costs and lower quality



● Reflow Furnace (photograph courtesy of Furukawa Electric Co., Ltd.)

## Developing Products that Contribute to the Environment

##### Joint Development of "Cerac α" Heat-releasing Sheets with Ceramission Co., Ltd.

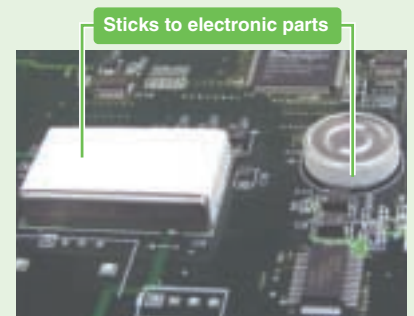
As a new material to release the heat generated during the operation of electric and electronic parts, Oki and Ceramission succeeded in the development of "Stick-It Flexible", a soft sticker-type heat-releasing material that sticks also to curved surfaces and can be cut with scissors. The new product is an application of "Cerac α", a liquid ceramic paint that radiates heat\*2) just by applying it, and started to ship in fiscal 2003. Stick-It Flexible is a sheet covered with environment-friendly inorganic paint that can form thin films of 50—150 μm at room temperature while taking advantage of the superior heat-radiating characteristics of ceramics, converting heat into far-infrared rays. The sheet reduces the heat generated during the operation of electric and electronic components by about 5-20%, making it an alternative for conventional heatsinks. Stick-It Flexible is an extremely effective means of suppressing heat even

without a cooling fan, reducing noise and size of the equipment. Since heat loss of components can be kept down, the new product also serves to prolong the life of electric and electronic parts and of the equipment, and helps to give the equipment more advanced functionality and to make it energy-saving.

\*2) Heat radiation: The dissipation of heat through conversion of heat energy into electromagnetic waves.



● Heat-releasing paint



● Heat-releasing sheet



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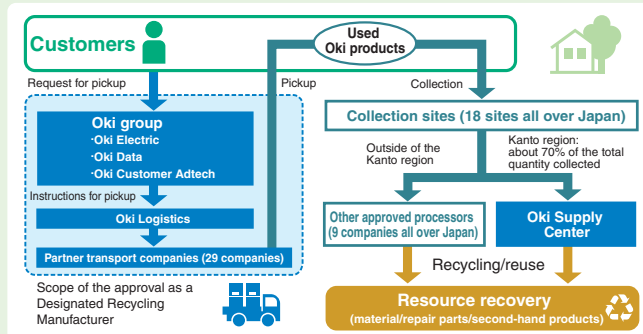
## Resource Recovery of Used Products

### Acquisition of the approval as "Designated Recycling Manufacturer"

On November 4, 2003, Oki Electric was approved as "Designated Recycling Manufacturer"<sup>\*1)</sup>, a designation defined in the Waste Management and Public Cleansing Law. The approval is given by the Minister of the Environment only to companies that collect, transport and dispose of their used products (industrial waste) with the purpose of recycling and eliminates the need of obtaining waste-processing permissions from the prefectures. This designation enabled Oki to collect used products as waste directly from its customers and recycle them. Oki promotes the resource recovery of used products by utilizing this scheme for the used product recycling system already built.

\*1) Designated Recycling Manufacturer: A manufacturer who is able to collect and recycle its own products using the existent logistics system.

### Product Recycling System as a Designated Recycling Manufacturer



## Contribution to Environmental Conservation in Business Activities

### Reducing CO<sub>2</sub> Emissions through Business Reforms

#### Reduction of 600 tons of CO<sub>2</sub> Emissions per Year from Fiscal 2004 through Server Integration

Intranet servers and common servers used by workplaces doing mainly deskwork use electric power at all times, so they have a significant influence on the reduction of CO<sub>2</sub> emissions. This is where we started reducing power consumption by reorganizing and merging servers all over the company through system integration and restructuring, and through prohibiting the installation of servers dedicated to specific sections. Our aim is to reduce the Oki group's currently 3400 servers by 50% until April 2006. In the initial year (fiscal 2004), we can reduce CO<sub>2</sub> emissions by 600 tons.



#### Development and Introduction of a Web System for On-demand Catalogs

Oki developed and introduced a web system for catalogs on-demand to realize an elimination of catalog inventories. The system starts operation in fiscal 2004. When a sales representative needs a catalog, he or she types the necessary information into a web form of the intranet. The required number of catalogs is printed, bound, and delivered to the sales representative through the company-internal mail system. The system helps to save 800,000 sheets of paper per year and reduce CO<sub>2</sub> emissions from the energy used for transport and other sources by 70 tons.



## Contribution to Environmental Activities of Society

### Supporting the NPO "Ecosystem Conservation Society-Japan"

#### Broadcasting pictures of the school biotope contest from the Iino Hall in Tokyo to sites all over Japan

To support this environmental NPO, which targets children—our next generation—we took advantage of our network solutions. In fiscal 2003, we did a live broadcast of pictures from the school biotope contest of the Ecosystem Conservation Society—Japan from the Iino Hall in Tokyo to sites of Oki Customer Adtech Co., Ltd., a group affiliate in charge of maintenance and service. For the broadcast, we used the live distance learning system "LiveOnAir" via the OKI MediaServer<sup>®\*2)</sup>. The pictures could be seen all over Japan also by people who were unable to participate on the day of the venue. The system is also used for education and new product briefings in the Oki group as part of the business reform, contributing to reductions in CO<sub>2</sub> emissions of 990 tons per year.

\*2) OKI MediaServer: A registered trademark of Oki Electric Industry Co., Ltd.



●Preparations for the broadcast to sites all over Japan



●School biotope contest

### ◆Other topics◆



Field	Topics	See page
Environmental management	Started environmental accounting at production sites in China	08
	Acquisition of ISO14001-certification by all overseas production sites	09
Management and reduction of chemical substances contained in products	Company-wide integration of the aggregation system for chemical substances contained in products	15
Development of environmentally conscious products	Compact ATM for the Chinese market	19
	Cadmium-free mobile PC keyboard	19
	PVC-free eco-cables	19
Developing products contributing to the environment	(Environment solutions)	20
Research and development on environmental conservation facilities	Organic waste liquid bio-recycle system for semiconductor plants	21
	Equipment for wet treatment of toxic gas in semiconductor plants	21
	Ozone deodorization system for incinerator sites	21
	Monitoring system for the density of released chlorine residue for hot spring facilities	21
Environmental education	Establishment of lead-free soldering school (certification)	22
Environmental consulting	Assistance in green procurement surveys on chemical substances	22
	Assistance in aggregating chemical substances contained in products	22
3R Efforts in Business Activities	Effective use of leftover food through raw garbage processors	25
	Introduction of direct silk equipment in electronic circuit board plants	26
Environmental conservation activities of overseas group companies	Awarded "Model Company for Environmental Conservation" in Changzhou city, China.	30
	Expansion of printer consumable recycling to overseas	30
Social activities	Reinforcement of efforts for CSR	31
	Reinforcement of compliance	31
	Active employment of seriously disabled persons	31
Environmental communication	Environmental education in internships	33
	Appearance in the "Warabi Learning College" (lectures to foster trendsetters in town-making)	34

