

# Global promotion of use of recycled resources based on the “Comet Circle”

## ■ Concept

Based on the concept of the Comet Circle that puts “Priority on Inner Loop Recycling,” the Ricoh Group is working on recycling materials with less environmental impact and higher economic efficiency by finely prioritizing reuse and recycling processes. As resource depletion becomes an ever pressing issue, the development, design, procurement, production, and collection/recycling divisions at Ricoh are cooperating in such activities as “reduction in size/weight of products and a longer product lifecycle,” “enhancement of reuse and recyclability,” “promotion of closed-loop material recycling,” “improvement of the quality of recycled machines,” and “reduction of packaging materials” as part of efforts to pursue effective utilization of resources and minimize the use of non-recycled, virgin resources in production. We are also striving to invent alternative materials, such as plant-based resin, as a measure against the risk of resource depletion, and develop recycling process technologies with lower environmental impact.

## ■ Targets for Fiscal 2010

- ① Increase the quantity of reused parts obtained from used products to 1,910 tons by fiscal 2010. (Japan)
- ② Increase the quantity of reused parts obtained from used products to 6,000 tons by fiscal 2010. (Outside Japan)
- ③ Accomplish the fiscal 2010 target quantity of recycled plastics used (750 tons in Japan).
- ④ Increase the quantity of resources collected from used products and recirculated (quantity of reused resources + quantity of recycled resources) to 16,000 tons by fiscal 2010. (Outside Japan)
- ⑤ Commercialize plant-based toners.

## ■ Review of Fiscal 2008

The quantity of reused parts obtained from used products was 1,735 tons in Japan and 4,898 tons overseas. The quantity of resources collected

from used products and recirculated overseas was 13,623 tons, and efforts are currently being made to further promote recycling to accomplish the set target. The quantity of recycled plastics used in Japan increased to 821 tons, exceeding the target quantity of fiscal 2010. The number of used copiers collected and the recycling rates in fiscal 2008 shown below does not include data in the Americas due to a system failure there. The quantity of used toner cartridges collected in terms of weight saw a decline, as shown below, but this is partly due to the weight reduction of each cartridge.

## ■ Future Activities

We will continue to effectively use recovered resources by increasing production and sales of recycled copiers as well as through extended use of recycled parts and materials, and thus provide our customers with products with less environmental impact and higher economic efficiency. For this purpose, it is important to improve resource recycling technologies, and increase the collection rate and collection quality of used products. By effectively utilizing collected resources while minimizing the use of virgin natural resources, Ricoh will contribute to creating a sustainable society.

Segment environmental accounting of the product recycling business (Japan)

Costs		Effects			
Items	Costs	Economic benefits		Effect on environmental conservation	
		Items	Benefits		
Product recycling cost	¥632 million	Sales	¥12,999 million	Amount of resource recovery: 26,440 tons Down 2,229 tons from that in the previous year	Amount of final disposal: 117 tons
Collection/resource recovery cost	¥2,197 million	Social effect	¥2,115 million		
<b>Total cost</b>	<b>¥2,829 million</b>				

\* Social effect refers to the cost of waste disposal that customers no longer have to pay.

## <Global>

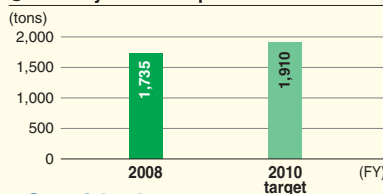
### ① Collection results and recycling rates for copiers and toner cartridges

	Amount of used products collected			Recycling rate
	Fiscal 2006	Fiscal 2007	Fiscal 2008	Fiscal 2008
Copiers	307,047 units	319,643 units	264,899 units*	98.7%*
Toner cartridges	1,023 tons	993.5 tons	982.6 tons	99.0%

\* Figures do not include data for the Americas. Please see Review of Fiscal 2008.

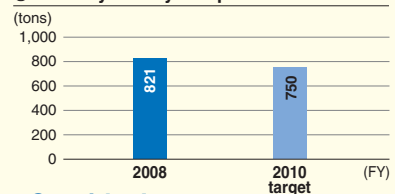
## <Japan>

### ② Quantity of reused parts



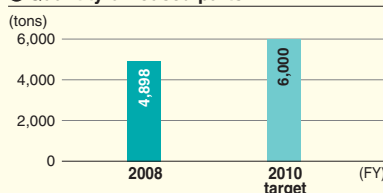
## <Japan>

### ③ Quantity of recycled plastics



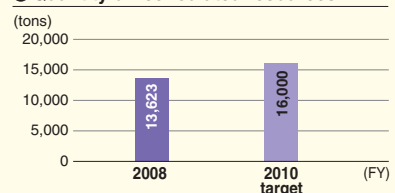
## <Outside Japan>

### ④ Quantity of reused parts



## <Outside Japan>

### ⑤ Quantity of recirculated resources



**Recyclable design**

**<Ricoh (Japan)>**

Recyclable design is an essential approach to promoting resource conservation and product recycling. To introduce recyclable design, an organization that is now known as the Recycling Technology Workshop was established in 1993. The workshop formulated the company's first recyclable design policy based on the Comet Circle, and has built up know-how in various areas, such as grading of materials, strength design with future reuse taken into consideration, reuse of high value-added parts, recycling of high-quality materials, improvement of ease of disassembling and sorting, and strength design for reducing packaging materials. After designing copiers and printers, designers carry out recyclable design self-assessments to make necessary improvements, and in this way, designers' consideration to recycling has already become a part of their core design process. In addition, we hold a recyclable design seminar twice a year to discuss how to deal with revised rules and new laws and regulations. The participants include designers of not only Ricoh's design division but also of its Group companies and suppliers, and in fiscal 2008, seminars were held in February and August, attracting about 60 attendees in total.

**Promotion of recycled copier business**

**<Ricoh Group (Global)>**

Ricoh copiers are offered mainly for lease in Japan, and every leased copier is placed under our management. This system facilitates the collection of used machines, and allows us to effectively utilize resources. The know-how accumulated through this practice is also made available in countries where the business model differs from that of Japan to help develop their recycling system. However, the collection of used machines requires energy- and cost-consuming transportation, and therefore, if collected products are not effectively utilized, collection will only create

## TOPIC

### Release of imagio MP C2200, Resource-saving Type Color Multifunctional Model

**The footprint is 33% smaller than that of monochrome machines. The model also features high energy-saving efficiency, plant-based resin components, and many other cutting-edge environmental technologies.**


Unlike other color multifunctional copiers, the size of the imagio MP C2200 launched in October 2008 is even smaller than monochrome copiers. Color copiers, which use several color toners, require a complicated mechanism, and this makes it difficult to downsize them as has been done with monochrome copiers. However, for the imagio MP C2200, we changed the paper feeding route and duplex unit drastically, and reduced the size of each mechanism to fit the size of Ricoh's smallest modules to make the footprint approximately 33% smaller than that of traditional monochrome copiers <sup>1</sup>, and make the weight approximately 20% lighter than its precedent color copier <sup>2</sup>. In addition, our new plant-based plastic with an approximate biomass content of 70% has been used for the manual pocket, setting a new example of a resource-saving product made of recyclable materials. The imagio MP C2200 is also prominent in terms of energy saving by employing the new color PxP toner <sup>3</sup> to reduce Typical Electricity Consumption (TEC) by approximately 30% <sup>4</sup> to help customers save space and energy.

1. In comparison with the imagio MP 2550, the footprint of the main body with the duplex unit, hand-feeding tray (closed), and inner finisher is 33% smaller.


2. In comparison with the imagio MP C2500. No automatic document feeder (ADF).

3. See page 22.

4. The measuring procedure is defined by the International ENERGY STAR Program. In comparison with the TEC value of the imagio MP C2500 SP (3.74).



imagio MP C2200, a downsized, lightweight color multifunctional copier



The inner finisher is designed in such a way that it can be mounted inside the body

substantial losses. Ricoh has adopted resource conservation and recycling as one of the pillars of its environmental conservation activities since the early 1990s, and has been working on the recycling of collected copiers, laser printers, toner cartridges, and supplies. More than 200,000 units of our used products are collected each year, and fully recycled\* or reused. Furthermore, in order to continuously promote recycling, it is also necessary to create economic value from recycling. Ricoh therefore has been engaged in recycling copiers in Japan by

collecting used machines from the market and relaunching them back to market. Since the release of its first recycled copier in 2001, Ricoh has expanded its lineup more actively than any other company to offer a wide variety of recycled machines with a copying productivity ranging—as of fiscal 2008—from 35 pages per minute to 75pp/min. Ricoh is also planning to release its first recycled color copier in 2009.

\* The recycling rate of copiers is more than 99.5%.

### Improvement of recycling quality with recycling information system

In addition to product information from the procurement of materials to sales, the Ricoh Group also controls information on each of office equipment unit after sales using the recycling information system. Ricoh's recycling information system is an original traceability system designed specifically for collection and recycling purposes, whereby each unit collected is bar-coded to trace its status throughout the process. The conditions of copiers used by customers are also recorded in the monitoring database within the system. The system allows efficient production and quality improvement of recycled products due to its ability to manage on a individual unit basis, enabling identification of which collected items are currently going through which process. Used copiers are first collected by Ricoh's local sales subsidiaries/dealers or

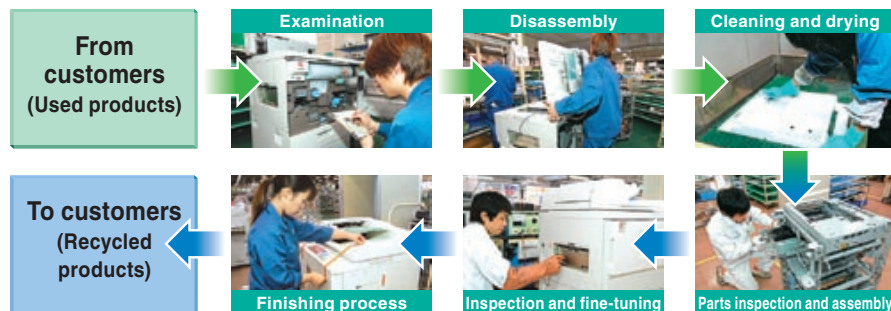
our Green Centers located in 11 cities across Japan, and sorted by model and quality level at Aggregation Centers to determine whether each collected machine will be recycled or dismantled for parts reuse or material recycling. Only products that have passed rigorous inspections are finally sent to recovery centers. At recovery centers, used products are examined again to note their condition (quality, deterioration, etc.), and then disassembled, cleaned, and washed. Data stored in the hard disc is also erased. In the assembling process, deteriorated parts and supplies are replaced with new ones. Assembled products then go through paper feeding tests, fine-tuning, and a finishing process before shipped to ensure they meet the same standards as those for regular products. The finished recycled products are provided with the same quality warranty as that for new products.

### imagio Neo 753RC/603RC received the Sustainable Design Award

#### <Ricoh (Japan)>

In fiscal 2008, imagio Neo 753RC/603RC, Ricoh's recycled multifunctional digital copiers, received the Sustainable Design Award, a new award category established as part of the Good Design Awards presented by the Japan Industrial Design Promotion Organization (JIDPO). The Sustainable Design Award is given to products recognized for their prominent roles in the realization of a sustainable society in view of current global environmental problems. The reasons for selecting the imagio Neo 753RC/603RC according to JIDPO were because they reflect Ricoh's devoted, globally outstanding commitment to the recycling of collected products; their overall shape is straightforward and simple; overall build and finishing are sound; and the operability of the interface and maintainability are high.

#### Recycling process for copiers



### IPSiO SP 4210, a printer with resource-recirculating type toner cartridge

#### <Ricoh (Japan)>

Ricoh released the IPSiO SP 4210, an A4 monochrome laser printer with a resource-recirculating type toner cartridge in January 2009. For this product, Ricoh retains the ownership of cartridges (containers), and customers purchase only their content—toner. The effective utilization of collected and recycled cartridges has led to a 10% reduction in the price of toner. The new model is expected to help customers save both time and costs necessary for collection and recycling, and further promote resource recirculation.

### Promoting eco packaging

#### <Ricoh Group (Japan)>

Ricoh has long been working to reduce the use of packaging materials. In 1994, we started "eco packaging" which uses less cardboard. In 2001, we introduced further advanced "resource-recirculating eco-packaging" materials to the market. These resin-based packaging materials can be used repeatedly. As of fiscal 2008, about 70% of copiers shipped from Japanese factories were packaged in these resource-recirculating eco materials. In addition, we are engaged in activities in which we deliver products simply wrapped in damage-protection film to the customers direct from the factory. Through these efforts, we are reducing consumption of packaging materials by some 1,350 tons each year, equivalent to about 1,750 tons of CO<sub>2</sub> emissions.



Resource-recirculating eco packaging