







# PFU Environmental Action Plan







Out of our PFU ESG targets (FY2023-FY2025), we set environmental targets related to the material issues of "Creativity from Work" and "Zero-Carbon society" and worked towards the targets.

Material Issues	Environmental Targets	Results from Fiscal 2022	Targets for Fiscal 2024	Targets for Fiscal 2025	
Resolving social issues through business	<b>Creativity from Work</b> Sales of high-end scanners with high added value that contribute to customers' business efficiency (fi Series: global sales)  	369,824 units	390,000 units	392,000 units	
	Reduction rate of Scope 1 and 2 GHG emissions  	5,126 tons of CO <sub>2</sub>	5,332 tons of CO <sub>2</sub>	4,697 tons of CO <sub>2</sub>	
	Reduction rate of Scope 3 GHG emissions  	Product compliance with the International ENERGY STAR Program Scanner products	Product compliance with EPEAT: 100% (3 products)	Product compliance with EPEAT: 100%	Product compliance with EPEAT: 100%
	Acquisition of EPEAT	Scanner products	Product compliance with EPEAT: 100% (3 products)	Product compliance with EPEAT: 100%	Product compliance with EPEAT: 100%
	<b>Zero-Carbon Society</b> Environmental performance index	Embedded computing products	4.01	4.30 or less	4.22 or less
		Interactive KIOSKS	14.36	11.263 or less	10.46 or less
		Network appliance products	0.537	0.557 or less	0.546 or less
		Security products	0.256	0.256 or less	0.256 or less
	Amount of environmental contribution to our customers' places of business by providing customers with our products	Embedded computing products	9,465 tons of CO <sub>2</sub>	8,155 tons of CO <sub>2</sub>	8,277 tons or CO <sub>2</sub>
		Interactive KIOSKS	1,732 tons of CO <sub>2</sub>	1,332 tons of CO <sub>2</sub>	762 tons of CO <sub>2</sub>
		Network appliance products	339.6 tons of CO <sub>2</sub>	301.8 tons of CO <sub>2</sub>	190 tons of CO <sub>2</sub>
		Security products	660.3 tons of CO <sub>2</sub>	645.0 tons of CO <sub>2</sub>	649.6 tons of CO <sub>2</sub>
	Environmental contribution to our customers' places of business by providing environmentally conscious solutions	Documents	1,295.1 tons of CO <sub>2</sub>	762.3 tons or CO <sub>2</sub> or more	839.3 tons of CO <sub>2</sub>
		Solutions	5,977 tons of CO <sub>2</sub>	4,023 tons of CO <sub>2</sub>	4,109 tons of CO <sub>2</sub>

## Results from Activities in Fiscal 2023

During fiscal 2023, the first year of the three-year plan, we pursued 16 environmental targets and achieved 14 of them.

✓: Target achieved -: Target not achieved

Material Issues	Environmental Targets		Targets for Fiscal 2023	Results from Fiscal 2023	Evaluation		
Resolving social issues through business	Creativity from Work	Sales of high-end scanners with high added value that contribute to customers' business efficiency (fi series: global sales volume)  		433,000 units or more	369,824 units	-	
		Reduction rate of Scope 1 and 2 GHG emissions  	Reduction of GHG emissions		5,947 tons of CO <sub>2</sub> or less	5,126 tons of CO <sub>2</sub>	✓
	Improvement of quality and enhancement of business efficiency		At least one suggestion per department (21 departments)	At least one suggestion per department (Achieved in all 21 departments)	✓		
	Zero-Carbon Society	Reduction rate of Scope 3 GHG emissions  	Product compliance with the International ENERGY STAR Program	Scanner products	Product compliance with EPEAT: 100% (3 products)	Product compliance with EPEAT: 100% (3 products)	✓
			Acquisition of EPEAT	Scanner products	Product compliance with EPEAT: 100% (3 products)	Product compliance with EPEAT: 100% (3 products)	✓
		Improvement in environmental performance index score	Embedded computing products	4.39 or less	4.01	✓	
			Interactive KIOSKS	14.44 or less	14.36	✓	
			Network appliance products	0.546 or less	0.537	✓	
			Security products	0.256 or less	0.256	✓	
		Improvement in the amount of environmental contribution to our customers' places of business by providing our customers with our products	Embedded computing products	7,956 tons of CO <sub>2</sub>	9,465 tons of CO <sub>2</sub>	✓	
			Interactive KIOSKS	1,628 tons of CO <sub>2</sub> or more	1,732 tons of CO <sub>2</sub>	✓	
			Network appliance products	277.1 tons or CO <sub>2</sub> or more	339.6 tons of CO <sub>2</sub>	✓	
			Security products	648.4 tons or CO <sub>2</sub> or more	660.3 tons of CO <sub>2</sub>	✓	

		Improvement in the amount of environmental contribution to our customers' places of business by providing our customers with environmentally conscious solutions	Documents	724.6 tons of CO <sub>2</sub> or more	1,295.1 tons of CO <sub>2</sub>	✓
			Solutions	3,960 tons of CO <sub>2</sub> or more	5,977 tons of CO <sub>2</sub>	✓
		Promotion of environmentally conscious solutions and services		At least one suggestion per department (7 departments)	At least one suggestion per department (Achieved in 6 out of 7 departments)	-

## Sales of High-end Scanners That Contribute to Customers' Business Efficiency

We sold high-end scanners that helped improve our customers' business efficiency with high added value with the aim of creating more comfortable working environments for everyone through the power of people and digital technology.

High-end scanner sales volume (fi series: global sales volume)	Target for Fiscal 2023	Result from Fiscal 2023
	433,000 units or more	369,824 units

## Reduction of GHG emissions

We are working toward a zero-carbon society by engaging in energy-saving activities to reduce energy consumption (\*1). In fiscal 2023, we engaged in activities including reassessing our air-conditioning systems and expanding our use of renewable energy.

- \*1: Scope 1: Gasoline and light oil (for company-owned cars used on the company premises), liquefied petroleum gas (dining hall kitchen), town gas (heating and cooling), kerosene (heating)  
 Scope 2: Purchased electricity and heating (district cooling and heating at the Yokohama headquarters)

Energy consumption (CO2 conversion value: t-CO2)	Target for Fiscal 2023	Result from Fiscal 2023
	5,947 tons of CO <sub>2</sub> or less	5,126 tons of CO <sub>2</sub>

### ■ Saving energy by changing air conditioning settings in computer room

At our headquarters, we changed the temperature settings in the computer room, monitored changes in room temperature, and analyzed the operating rates of the air conditioners. As a result, we were able to reduce the number of operating air conditioners by one unit to achieve the optimal air conditioner operating conditions, allowing us to save energy.

Business site	Headquarters
When improvements were made	June 2023
Amount of Reduction in CO <sub>2</sub> Emissions	76.2 tons of CO <sub>2</sub>

### ■ Utilization of renewable energy

PFU will contribute to the wider spread of renewable energy across all of society while also working towards the adoption of renewable energy, to reach the Ricoh Group's goal of achieving virtually zero CO<sub>2</sub> emissions.

Renewable energy consumption in FY2023	
ProDeS Center	1,260,000 kWh (Purchased non-fossil certificates with tracking. Equivalent to 34% of the electricity used annually at the ProDeS Center)
Yokohama Headquarters	950,891 kWh (Used a plan that meets the "RE100 TECHNICAL CRITERIA" requirements for the power supplied to the building)

証明書番号: 000000037345  
 Non-fossil fuel certificate (NFC) with tracking (Broking)

取引番号	取引日	取引先	取引内容	取引金額	取引単位	取引場所	取引時間	取引状態	取引備考
1	2023/07/01	PFU	電力取引	1,260,000 kWh	1	東京	15:00-16:00	完了	
2	2023/07/01	PFU	電力取引	950,891 kWh	1	横浜	15:00-16:00	完了	

## Improvement of Quality and Enhancement of Business Efficiency

Even in in-house work, we promote the reduction of the environmental burden through the enhancement of business efficiency and the improvement of quality using IT, which leads to promoting environmental activities that are focused on our core business. In fiscal 2023, we promoted the improvement of quality and the enhancement of business efficiency of our core business at all departments.

### Examples of Improvements in Fiscal 2023

#### ■ Improved efficiency and reliability of inspection work from the introduction of the visual inspection apparatus for parts in printed circuit board manufacturing

**We have developed and introduced a visual inspection apparatus for parts in printed circuit board manufacturing to work towards improving the efficiency and reliability of inspection work.**

**Parts insertion inspection process up until now**

**Inspection details (manual visual check)** Check for an  
Check for parts inserted in the wrong orientation

**Inspection Procedure**  
Place a masking jig on each individual product and **visually check** that the conditions are correct for each part being inspected.

Example of wrong orientation (5mm x 8mm)

Housing cutout orientation

Example of wrong orientation (5mm x 20mm)

Key pin orientation

**Problems**

**(1) Wrong masking jigs are used**

- Manual visual inspections are performed for about 300 types of products, each requiring a specific masking jig

**(2) No matter how many man-hours are put in, there are overlooked parts**

- There are 1 to 63 inserted parts per product  
→ **Work stress** from the large numbers of inspection man-hours

**Development of Visual Inspection Apparatus for Parts**

By pre-programming the correct conditions of each part when it is inserted, we developed a visual inspection apparatus that **automatically takes pictures of** missing parts or parts inserted in the wrong orientation and identifies **them as such through image processing.**

**After introducing apparatus**

(1) **No need to change** masking jigs!  
(2) Mounting errors (missing/mounted in reverse) for inserted parts **can be identified quickly without a manual visual check**

Example: Inspection time when there are 60 inserted parts  
90 seconds → 10 seconds  
(Manual visual check) (Automatic inspection apparatus)

**89% quicker**

- No need to manufacture new masking jigs and manage masking jigs
- Inspection man-hours are **reduced by 900 hours per year** and high quality is ensured because there is no outflow of defective products

**Benefits**

- No need to manufacture/manage the different masking jigs
- Reduction of inspection man-hours and improvement in quality

#### ■ Reduction of liquid nitrogen usage

In the printed circuit board manufacturing process, oxygen can combine with the solder and PCB surface mount components and causes them to oxidize, resulting in poor solderability. To address this, we maintain an oxygen-free environment in our manufacturing facilities by providing them with a continuous supply of nitrogen. This nitrogen is produced using equipment that extracts nitrogen from the air (nitrogen generator) and liquid nitrogen.

In FY2023, we achieved a 52.2 tons (-69.4%) reduction in liquid nitrogen consumption by implementing the following measures.

- Improving nitrogen generation efficiency by renewing the nitrogen gas generator
- Reducing nitrogen consumption by complete transition to selective soldering machines (use of nitrogen in selective soldering: introduced in 2022)



Nitrogen generator



Selective soldering machine

## Eco-efficient Products

We make efforts to develop and provide eco-efficient products that support "energy-saving", "3R design (\*2)", and "management of used chemical substances" in order to reduce the burden on the environment throughout the product's entire life cycle. In fiscal 2023 in order to contribute to reducing the environmental burden at our customers' places of business by releasing more products with advanced environmental performance, we engaged in activities setting the improvement of environmental performance as an environmental target for products, solutions, and services in all our business departments and promoted the development and provision of eco-efficient products.

### Main Achievements of Fiscal 2023

Zero-Carbon society	Product compliance with the International ENERGY STAR Program Acquisition of EPEAT	Scanner products	<ul style="list-style-type: none"> <li>As planned, we complied with the International ENERGY STAR Program for 3 newly-developed models.</li> <li>As planned, we acquired certification for 3 new models that are to be expanded to North America, for EPEAT (Electronic Product Environmental Assessment Tool), an environmental evaluation system for electronic products adapted as a system for promoting green purchasing, primarily in organizations related to the American government.</li> <li>As our environmentally conscious activities, such as 3R design and energy-saving functions became recognized, 3 new models received Eco Mark certification.</li> </ul>
	Improvement in environmental performance index score  Improvement in the amount of environmental contribution to our customers' places of business by providing our customers with our products	Embedded computing products	To make environmental contributions, we made efforts to develop better products by improving the environmental contribution indexes that we defined based on our own standards. We have also made efforts to reduce the environmental burden at our customers' places of business by providing our products for customers.
		Interactive KIOSKS	To make environmental contributions, we made efforts to develop better products by improving the environmental contribution indexes that we defined based on our own standards. We have also made efforts to reduce the environmental burden at our customers' places of business by providing our products for customers.
		Network appliance products	To make environmental contributions, we made efforts to develop better products by improving the environmental contribution indexes that we defined based on our own standards. We have also made efforts to reduce the environmental burden at our customers' places of business by providing our products for customers.
		Security products	To make environmental contributions, we made efforts to develop better products by improving the environmental contribution indexes that we defined based on our own standards. We have also made efforts to reduce the environmental burden at our customers' places of business by providing our products for customers.

	Improvement in the amount of environmental contribution to our customers' places of business by providing our customers with environmentally conscious solutions	Documents/ Solutions	We have made efforts to reduce environmental burden at our customers' places of business by providing our environmentally conscious solutions for the customers.
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\*2: 3R design: Design in which the concepts of "Reduce", "Reuse", and "Recycle" are taken into consideration.

### Main Eco-efficient Products for Fiscal 2023

We contribute to reducing the burden on the environment from our customers' business by offering products that comply with the Act on Promoting Green Procurement with energy-saving and 3R design features, and furthermore that comply with various environmental standards. Information about the compliance of our scanners with environmental standards is published on our official company website.



fi-8950/fi-8930/fi-8820

- Product compliance with the Act on Promoting Green Procurement
- Product compliance with the International ENERGY STAR Program

Power consumption during sleep mode:  
fi-8950/fi-8930/fi-8820: 2.5W or less



- Eco Mark certified products  
fi-8950/fi-8930/fi-8820: 23 155 022
- Product compliance with chemical substance regulations (RoHS Directive Regulation, etc.)



Information for EPEAT 4.7.2.2: [Public disclosure of supply chain toxics](#)

## Environmentally Conscious Solutions and Services

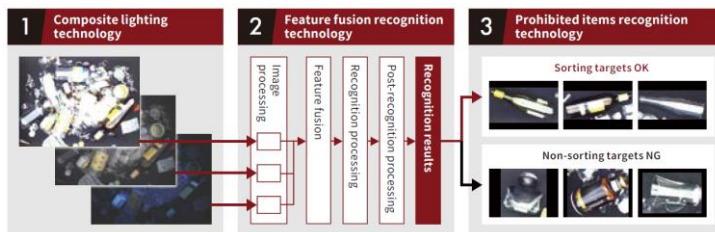
We provide environmentally conscious solutions and services that contribute to reducing the burden on the environment from our customers' business, such as energy conservation and paperless work, through more efficient business, reduced consumption, reduced movement, and efficient use of space. In fiscal 2023, we moved forward with the activities that contribute to reducing the environmental burden on our customers, such as developing and shipping various solutions and services, and expanding the provision of solutions and services that utilize scanners.

### Main Achievements of Fiscal 2023

Reducing our customers' environmental burden by expanding our environmentally conscious solutions and services	Activity	Product
	<ul style="list-style-type: none"> <li>• Development and shipment of environmentally conscious solutions</li> <li>• Expansion of the provision of solutions and services that utilize scanners</li> <li>• Promotion of virtualization, cloud negotiation, etc.</li> </ul>	<ul style="list-style-type: none"> <li>• DynaEye 11</li> <li>• BIP Smart</li> <li>• PaperStream Capture</li> <li>• Caora</li> </ul>

#### ■ Raptor VISION BOTTLE, a bottle color sorting AI engine specialized for sorting bottles

A large amount of waste is thrown away every day around the world, and the issues of manpower insufficiency and complicated sorting of recyclable waste at intermediate processing facilities is becoming more and more apparent. Raptor VISION BOTTLE is an AI engine that we have developed and are now offering. This product sorts bottles by color, a task which had been difficult to automate and previously relied solely on human labor. We have combined our optical and image recognition technologies with our original algorithms to identify bottles by color and determine whether a bottle can be recycled (the AI engine update service updates the recognition model and provides the latest engine as needed).



A camera takes pictures of bottles being carried on the conveyor belt and precisely identifies brown glass bottles, clear glass bottles, other types of glass bottles, and plastic bottles. The camera is linked to a picking robot that automates the bottle recycling process.

- Recognition accuracy: 99.9% (results at the time of the demonstration experiment in April 2024)
- Return on investment: 20% reduction of man-hours (estimated value of 10-year amortization with 3 less workers)

In the future, we plan to expand the application of this AI engine into the automatic detection of lithium-ion batteries (exhibited at the New Environmental Exposition 2024). These batteries cause fires and have been causing concern. We also plan to expand the application of the engine into the automatic sorting of industrial waste (including metals, building materials, and clothing).



**Raptor VISION**  
BOTTLE