

Recycling Resources

Fuji Electric is promoting the 3Rs (reduce, reuse, recycle) for in its products at the design, manufacturing, and disposal phases. At the same time, we are contributing to the creation of a recycling-oriented society by striving for zero emissions at our operational sites.

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Reducing Waste

Fuji Electric strives to reduce total waste volumes, promote recycling, and decrease the amount of waste sent to landfills. To this end, we are creating more-compact and -lightweight products, employing designs that do not include regulated substances, and working to decrease the number of defective products at the manufacturing stage through quality management initiatives.

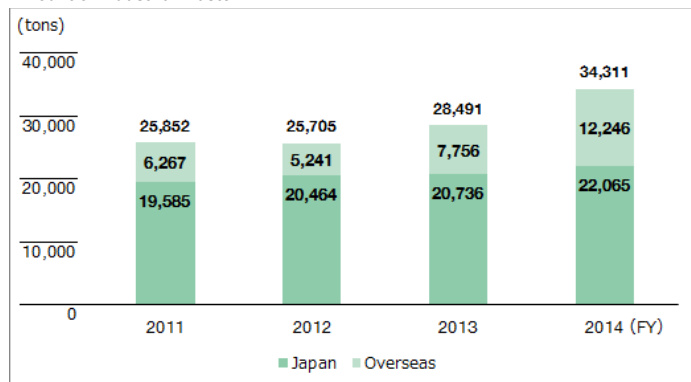
To pursue zero emissions, we have set the target of reducing the ratio of waste from the Company's business activities sent to final disposal (volume of waste sent to landfills / total volume of waste produced) to below 1%. Resource recycling initiatives are being advanced accordingly.

In Japan, efficient use of resources (reduce, reuse, recycle) has enabled Fuji Electric to achieve its goal of zero waste every year since fiscal 2004. In fiscal 2014, we achieved our goal of reducing the ratio of waste sent to landfills to less than 0.5%, with a ratio of 0.28%.

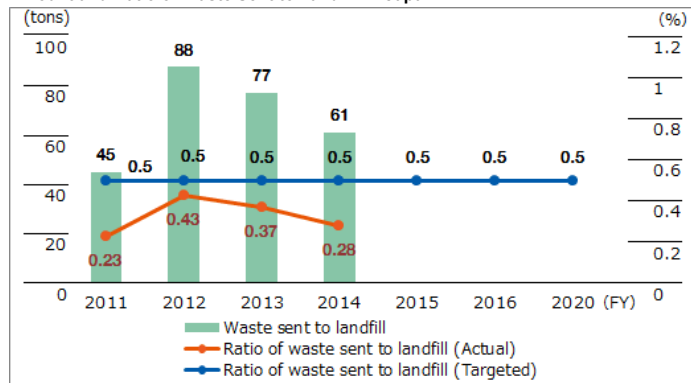
Meanwhile, we have also begun promoting zero emission efforts at our factories overseas. Since fiscal 2008, we have been collecting data based on waste categories used in Japan (volume generated, volume recycled, volume sent to landfills). In fiscal 2014, we clarified the types of waste generated by each business site based on their respective waste classifications to assist our efforts to encourage more effective use of resources. Looking ahead, we will continue to monitor how waste is processed, consider further methods for recycling resources, and aim for even greater improvement in the ratio of waste sent to landfills.

(Targets for final disposal rates overseas have been changed as a result of clarifying waste categories and taking into account targets at the respective sites.)

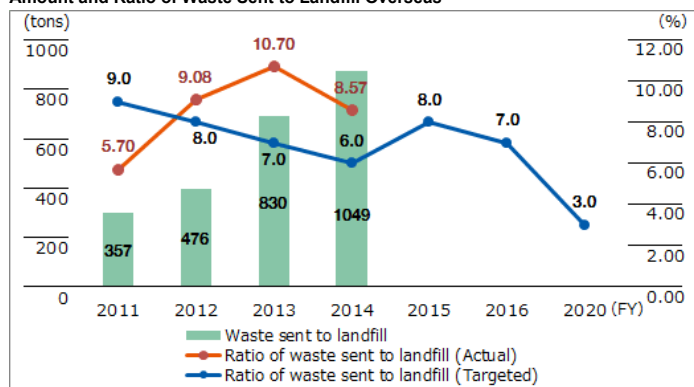
Amount of Industrial Waste



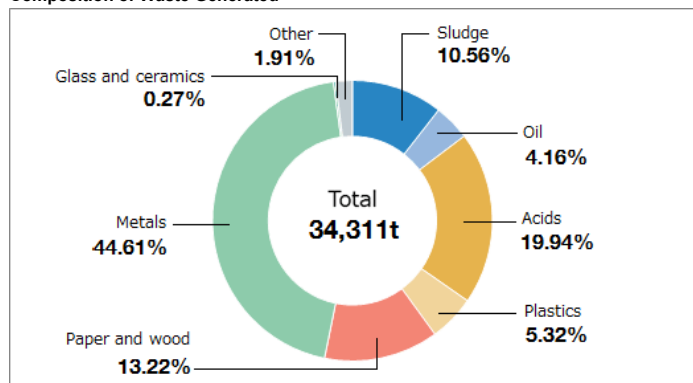
Amount and Ratio of Waste Sent to Landfill in Japan



Amount and Ratio of Waste Sent to Landfill Overseas



Composition of Waste Generated



Case Example of Initiatives to Reduce the Amount of Industrial Waste

TOPICS

Involving Everyone in Environmental Activities

At the Shikoku Division, practice committee members are selected for industrial waste reduction, energy conservation and other individual environmental programs across four regions—Takamatsu, Matsuyama, Kochi and Tokushima. Together, they promote the division's environmental management system.

Given the importance of improving awareness of environmental issues and maintaining ongoing activities, the division issues every employee an Environmental Management Card printed with the Company's environmental policies. On the back, employees fill in their own list of things they could or should be doing and display them at their desks. Everyone gets involved.

The division has been recognized for these efforts, which have been effective in reducing and recycling business-related waste and curbing greenhouse gas emissions, and was given the 3rd Annual Eco City Takamatsu Excellent Business Award by Takamatsu City.



Environmental Management Cards distributed to every employee

Efficient Use of Water Resources

In view of the problem of global water resource depletion, in addition to its efforts to comply with wastewater standards and reduce wastewater, Fuji Electric is active in an initiative aimed at more efficient use of water resources. Using fiscal 2010 levels as a standard, this initiative aims to reduce both total water intake and production base units of consumption at our domestic manufacturing sites by 1% each, with the goal of reducing those levels by 10% in fiscal 2020.

We have set new targets for overseas of a 25% reduction in water consumption per unit of production from fiscal 2011 levels by fiscal 2020.

Moreover, as a result of water stress assessments* conducted at all production bases in Japan and overseas, we found that our Shenzhen Factory was the only one with a high water risk.

* A comprehensive judgment of a base's water stress based on three indices

1. Results of global water stress assessments by region through the World Resources Institute Aqueduct Water Risk Atlas
2. Volume of water consumption
3. Water supply infrastructure


Example of an initiative for effective water use at a production base

China's Shenzhen Factory, which produces photoconductive drums, is in an area with high risk in a water stress assessment where supply restrictions are applied on the water indispensable for production in a dry season. Consequently, we have installed wastewater treatment and recycling facility in the Shenzhen Factory that enables it to control the volume of industrial-use water and

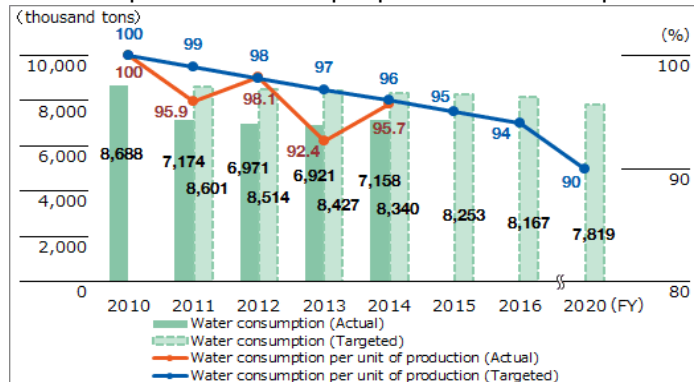
wastewater. As a result, instead of the targeted 70% water recycling rate we agreed with the City of Shenzhen, we were able to raise that to an actual 80%, enabling a production framework with water stability.

In addition, our Malaysian production base uses significant volumes of water even though its water risk is not high. Consequently, we set a target of reducing its water consumption by 2020 to 70% of the 2011 level, kicking off initiatives such as improving the management standards of production equipment using water and installing pure water recycling devices. As a result, in fiscal 2014 we reduced water consumption by 286,000 tons year on year.

Just two years have passed since the target for water consumption per unit of production was set, but it has already been achieved by a wide margin thanks to increased production volume as well as the ongoing reduction activities noted above at both the Shenzhen and Malaysia factories, which consume large amounts of water.

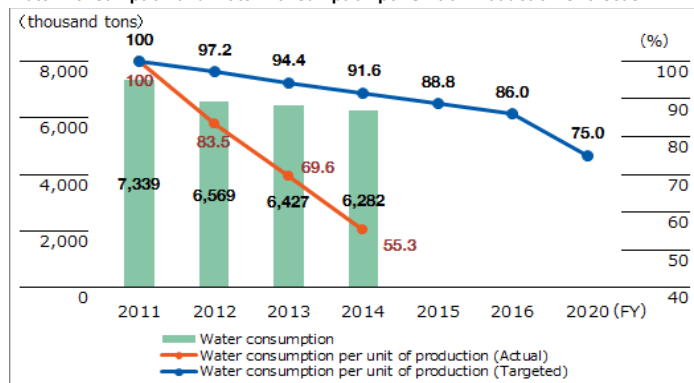
Initiatives at Matsumoto Factory	
<p>The Matsumoto Factory uses large quantities of pure water during the process of manufacturing semiconductor wafers and also utilizes a significant amount of water for cooling production equipment. For this reason, effectively utilizing water resources and reducing overall usage volumes is an important theme for initiatives at this factory.</p>	
<p>Pure water recycling initiatives:</p> <p>We categorize wastewater from manufacturing processes, and water still of relatively high quality is recycled for use in creating pure water. The ratio of water recycled in this manner was 60.4% in fiscal 2014.</p> <p>Introduction of electric pure water manufacturing devices:</p> <p>Manufacturing pure water utilizing ion exchange resins requires that these resins be periodically regenerated, and water and chemicals must be used for this process. By introducing one electric pure water manufacturing device, the Matsumoto Factory is now able to continually create pure water without needing to use chemicals to regenerate ion exchange resins. Accordingly, the factory is no longer required to use regenerative chemicals to treat wastewater, an accomplishment that helped reduce usage volumes of electricity, water resources, and chemicals and lower the total costs of manufacturing pure water.</p> <p>Installation of wastewater recovery systems (Integrated Water Management):</p> <p>Wastewater from factories is expelled into public sewer systems after undergoing final treatment. After installing wastewater recovery systems, the Matsumoto Factory has been conducting recycling processes (filtration via coagulation sedimentation) for wastewater to enable this water to be reused in factory cooling towers, toilets, and other facilities (approximately 1,000 tons reused each day).</p>	

Water Consumption and Water Consumption per Unit of Production in Japan



* The amount of water consumed for the amount of production (Presenting FY2010 level as 100)

Water Consumption and Water Consumption per Unit of Production Overseas



* The amount of water consumed for the amount of production (Presenting FY2011 level as 100)

Note: In fiscal 2014, two new factories were added to the scope of consolidation (Fuji Electric (Zhuhai) Co., Ltd. and Shanghai Electric Fuji Electric Power Technology (Wuxi) Co., Ltd.).

Water consumption in Japan

Unit : thousand tons

	Purchased water	Groundwater intake volume	Total water consumption
FY 2010	4,416	4,272	8,688
FY 2011	3,272	3,902	7,174
FY 2012	3,251	3,720	6,971
FY 2013	2,990	3,931	6,921
FY 2014	3,072	4,086	7,158

Note: Purchased water is the volume of industrial-use and clean water.
Overseas, we consumed all water purchased.

Recycled water

Unit : thousand tons

	In Japan	Overseas	Total
FY 2012	566	84	650
FY 2013	695	188	883
FY 2014	675	211	886

Efficient use of resources, Reduction of raw materials

When designing products, Fuji Electric conducts product assessments to evaluate the effectiveness of resource usage. Efforts to effectively utilize resources through product designs include making products that are more compact, weigh less, and have longer lifespans and avoiding usage of regulated, harmful chemical substances. In regard to manufacturing, meanwhile, we focus on effectively utilizing materials, decreasing the number of defective products created, and reducing packaging. Furthermore, we have defined waste volume per unit of sales at production facilities as a management index for efforts to reduce the usage of raw materials and have set the target of realizing a 25% reduction in this index (versus 2006) by 2020.

Case Example of Initiatives to Reduce Waste Emissions and Save Resources Related to Products

We promote the 3Rs (reduce, reuse, recycle) in our vending machine products in an effort to reduce waste emissions. Specifically, other efforts include reducing the size and weight of products to save resources, and printing warning labels directly on the inside of container lids to reduce materials used in labels. In addition, we have successfully realized smaller packages for SiC semiconductors with 75% less volume than that of conventional semiconductors. Also, our large-capacity UPSs, which employ new power devices, have been made 30% smaller. Through these efforts, we have succeeded in substantially reducing the resources and materials used in our products.

Environmental Impact Reduction Across Entire Product Lifecycles

Fuji Electric aims to reduce environment impacts across entire product lifecycles. To this end, we conduct product assessments and design reviews during the design phase to evaluate the environmental performance of products. These evaluations look at a wide range of environment factors, including energy- and resource-saving properties as well as the usage of harmful chemicals, ability to contribute to lower chemical usage during manufacturing processes, transportation concerns, and other factors related to the realization of a sustainable society. Through these evaluations, we are working to reduce environmental impacts.

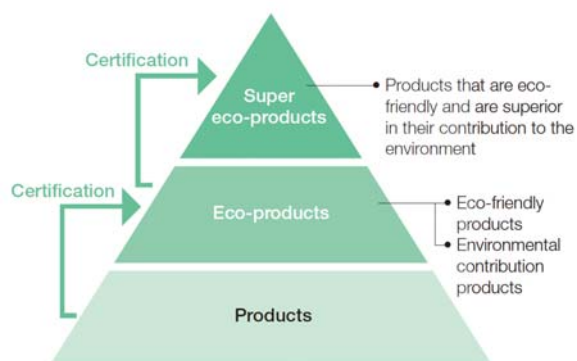
Eco-Product Certification System

Fuji Electric is developing eco-friendly products, which enhance energy efficiency and reduce the use of chemical substances, and environmental contribution products, which help reduce society's overall impact on the environment. We are continuing to promote the spread of these products.

In this initiative, Fuji Electric has established a common Fuji Electric Eco-Product Certification System. We evaluate the degree of product eco-friendliness on a Company-wide platform. Products meeting fixed criteria are certified as "eco-products," while those that are at the top of the industry for environmental benefit and contribution, and which are recognized outside the Company at the national level for environmental superiority are labeled "super eco-products."

In fiscal 2014, 21 offerings were certified as eco-products, while another 8 received certification as super eco-products. As a result, we now have 178 eco-products and 24 super eco-products.

Eco-Product Certification System



Eco-Product Definitions	
Eco-Friendly Products	Products that have a reduced environmental impact over the entire product lifecycle. These products are superior to traditional products in at least four of six standard areas, including energy conservation, resource conservation, and recyclability.
Environmental Contribution Products	Products that contribute to environmental preservation during use. Products that contribute to the environment by utilizing natural energy or information and communication technology.

Fiscal 2014 Super Eco-Products

TOPICS

“F-COOL NEO” Indirect Outside Air Conditioning Unit

Fiscal 2014 Super Eco-Products Awarded the Japan Machinery Federation’s President Award for Superior Energy-Saving Machines.

Responding to changes in outside air temperature, the F-COOL NEO switches automatically between three modes of operation (a hybrid operation of indirect outside air cooling and refrigeration cooling), enabling optimal control over system operation and selecting the mode that provides the maximum energy savings. Utilizing the energy of outside air throughout the year can result in power consumption that is one-third that of conventional air conditioners.

The equipment requires only a power supply, needing no cold water or cooling equipment, making energy-saving operation possible.

Because outside air is not conducted directly through the air propulsion unit, contamination by outside moisture and dust is avoided, making the system ideal for data centers, precision machining, food and pharmaceutical production areas, and other places where clean cooling systems are required.

Looking at the environmental impact across F-COOL NEO’s lifecycle, the largest amounts of energy consumption (CO₂ emission) occur during the period in which F-COOL NEO is used by customers. We have therefore included energy efficiency improvements, which contribute to the reduction environment impacts during this period, as one of the factors evaluated in design specifications.



In total, eight products were registered as super eco-products in fiscal 2014, including a power conditioner for photovoltaic power systems that uses all SiC modules, the first in the world to do so, and for which we received the grand prize at the JEMA awards for electrical machinery engineers.

Ratio of Eco-Product Sales

Eco-products as a percentage of overall sales in fiscal 2014 increased two percentage points to 34%, up from 32% in fiscal 2013.