

Environmental Management

We at Fuji Electric are united in tackling environmental issues based on our policy of contributing to society by developing our energy-related business globally.

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Message from the Environmental Officer

The main pillars of Fuji Electric's Environmental Vision 2020 are to stop global warming, create a recycling-oriented society, and meet our corporate social responsibilities. To achieve these aims, we will promote environmental management, and contribute to the protection of the global environment by providing energy-conserving and energy-creating products and technologies. We will also undertake proactive measures to reduce environmental impact through our own production activities.

As a company operating energy-related businesses, we are particularly active in the area of stopping global warming, and we are publicly releasing energy conservation activities at manufacturing sites and related technical development across the Group. During fiscal 2015, new research and technological development centers were built at the Tokyo, Matsumoto, Suzuka, and Fukiage sites as global mother development centers, to accelerate the development and commercialization of new businesses and new products.

These development centers are implementing cutting-edge energy conservation technologies developed through the Smart Factory Initiative launched in 2012, and conducting verification for even further enhancements.

At the Yamanashi factory, which has made major strides under the Smart Factory Initiative, energy savings of roughly 35% compared with fiscal 2010 have been achieved, making it possible to provide energy-saving proposals based on the results and real machines to customers taking the factory tour.

By innovating energy and environmental technologies, we are contributing to the realization of a sustainable society that is safe and secure.



Michio Abe
Corporate General Manager of
Production and Procurement Group
Director and Senior Managing
Executive Officer
Fuji Electric Co., Ltd.

Fuji Electric's Material Issues for Environmental Management

Fuji Electric brought together staff from its management planning, technology development and business divisions to identify and prioritize material issues in promoting environmental management based on our Basic Policies on Environmental Protection, from both stakeholder and corporate viewpoints.

In 2009, we established Environmental Vision 2020 to guide our medium-term activities. The vision sets forth the three important themes below, and establishes specific measures and targets for addressing them.



Viewpoints Incorporated in Identifying Material Issues



Environmental Vision 2020

Our Environmental Vision 2020, formulated in fiscal 2009, designates three important issues: stopping global warming; creating a recycling-oriented society; and meeting our corporate social responsibilities. Focusing on these issues, we aim to achieve a sustainable society by reducing the environmental impact of our manufacturing activities, while also using the electric and thermal energy technologies in which we excel to provide products and technologies.

Our main initiatives under the issue of stopping global warming are to reduce CO₂ emissions during production by 20% in fiscal 2020 compared with the fiscal 2006 level of 381,000 tons, while reducing society's CO₂ emissions by 17 million tons by expanding sales of energy-saving and energy-creating products.

The cutting-edge technology of energy management efforts realized through CO₂ emission reduction activities at our factories will be incorporated into products in order to aid customers in their own CO₂ emission reduction activities.

Meanwhile, we continue to address to two major tasks with regard to production materials as part of our efforts for creating a recycling-oriented society. The first task is to realize overall reductions in the amounts of materials and parts used and waste emitted during production activities. In order to accomplish this objective, we are working to make product designs more compact, lightweight, and efficient while simultaneously reducing the amount of defective products created through manufacturing processes by implementing quality management initiatives. The second task is to achieve zero emissions by improving recycling rates. To address this task, we strive to guarantee that waste is properly separated in order to increase the portion of waste that is recycled and thereby work to reduce the amount of waste sent to final disposal to zero.

At the same time, effectively utilizing water resources has been positioned as a high-priority task as the risk of these resources being depleted is present on a global scale. We therefore aim to reduce the amount of water resource input per unit of production. In particular, we are stepping up efforts to increase water reuse rates at manufacturing sites that consume a lot of water and at overseas sites where there are significant water supply risks. Initiatives for meeting our corporate social responsibilities include implementing environmental education programs at Fuji Electric bases and conducting social contribution activities related to environmental perseverance at various manufacturing sites.



Environmental Management 3-Year Rolling Plan

To achieve the goals of the Environmental Vision 2020, Fuji Electric has formulated an Environmental Management 3-Year Rolling Plan, designed to promote ongoing efforts.

The objectives of the plan are to verify each year that the environmental management strategy is addressing societal changes, and to establish detailed targets in line with the Fuji Electric Basic Environmental Protection Policy in various areas, such as the enhancement of environmental management governance and the establishment of measures to address the use of chemical substances and prevent global warming. Fuji Electric will continually make revisions to the targets and action plans for each fiscal year up to 3 years in advance, and aim to achieve the goals of Environmental Vision 2020 with certainty.



Related Link

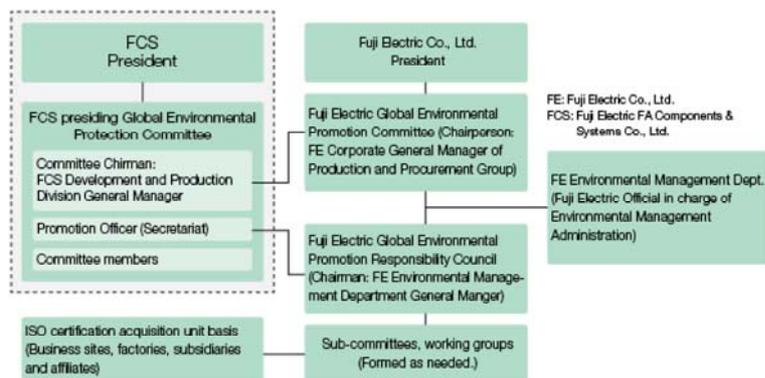
[Environmental Management Targets and Achievements](#)

Environmental Management Organizational Framework

To promote environmental management, Fuji Electric established the Global Environmental Protection Committee, which is headed by the director responsible for the environment and which reports directly to the president, and deliberates and decides on basic and comprehensive policies.

Moreover, when necessary we also hold sessions of the Fuji Electric Global Environmental Promotion Responsibility Council, which is comprised of the officers responsible for environmental management at Fuji Electric's principal factories and affiliated companies, and which looks into the development of major policies, as well as examines solutions for new issues.

Fuji Electric Environmental Management Promotion Structure



Environmental Management in accordance with ISO 14001

Fuji Electric has put in place environmental management systems at all of its production operations and sales bases in Japan as well as all of its overseas production operations and is pursuing third-party certification.

The Status of ISO 14001 Certification

(As of March 31, 2016)

No. of Sites with EMS		Japan	Overseas
Total		29	14
	Acquired	28	11
	Not yet acquired	1	3

No. of Sites with EMS	Japan	Overseas
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Status of Sites Not Yet Acquired

Japan: Production Technology Center in Saitama Prefecture is working toward acquisition (inspection scheduled for June 2016).
Overseas: Fuji Electric (Zhuohai) Co., Ltd. is planning for acquisition, and Shanghai Fuji Electric Switchgear Co., Ltd. and Fuji SMBE Pte are considering acquisition.

Internal Environmental Audits

Since fiscal 2003, the internal divisions responsible for environmental management administration have continued to conduct annual environmental site inspections of ISO 14001-certified sites.

In fiscal 2012, we reviewed the frequency of inspections based on standards for the degree of environmental impact, and during fiscal 2015, 13 sites in Japan and 3 sites overseas were inspected. Fact sheets* to visualize risks, which were introduced in fiscal 2014, were used at these sites.

With the revised Fluorocarbons Recovery and Destruction Law taking effect from fiscal 2015, inspections have focused on confirming the inspection status of the applicable equipment at each site. We discovered that the implementation of simplified inspections at some sites had been delayed, but confirmed that inspections had been completed at all sites by the fiscal year-end.

For sites that will not be inspected this year or have not acquired ISO certification, we will use environmental audit checklists and other means to confirm the status and give instructions to ensure compliance with environmental regulations and reduce environmental risks. In addition, we have begun "TV environmental inspections" from fiscal 2015 using a teleconferencing system at sites not being inspected on-site. This new initiative will reinforce the auditing of sites not being inspected.

ISO14001 was revised in 2015. Currently, all sites have begun working to formulate transition plans by the deadline.



Environmental site inspection in Kawasaki Factory

*Fact sheets combine an environment risk map, for recording the location of environmental facilities at each site and relevant historical data, and an environmental performance sheet, which is used to record environmental performance at each site, including energy consumption, chemical substance discharge and waste volume.

Environmental Violations in Japan

Fiscal year	Fines, Penalties	Recommendation by government	Primary exceeding reference value, notices
2011	0	0	1: *1
2012	0	0	1: *2
2013	0	0	0
2014	0	0	0
2015	0	0	2: *3

*1. Saitama regulation: When a contract (prior consultation for bringing waste into the prefecture) expired, the memorandum of understanding was extended.

*2. Wastewater exceeded pH standards at the Mie Factory, but the surrounding environment was not impacted (a voluntary report was submitted to the public administration). Automatic neutralization tanks have since been installed.

*3. Waste Management and Public Cleansing Act: Requested transporter to handle products to be discarded outside transporter's authorized area. (Food and Beverage Distribution)

Waste Management and Public Cleansing Act: Discovered after the fact that work had been commissioned to unlicensed transporter. (Fuji Furukawa E&C)

Operational flow will be reviewed to ensure that orders cannot be placed without confirming approval status.

Overseas sites: No legal violations during fiscal 2015.

Status of environmental communication with local communities

Fiscal year	Briefing, Social get-together, Presentation, etc.	Opinions, Requests, Complaints, etc.	
			(of which, number remaining unaddressed)
2011	10	4	0
2012	12	6	0
2013	13	6	0
2014	12	14	0
2015	18	5	0

Fiscal 2015 examples

Briefing, Social get-together, Presentation, etc.: Briefing, etc. on construction of new building held at Suzuka Factory

Opinions, Requests, Complaints, etc.: Fuji Electric Power Semiconductor's Iyama Factory held a workshop for junior high school students

Going forward, Fuji Electric will continue to engage in communication with stakeholders in local communities to contribute to environmental improvement.

Environmental Risk Management

In promoting environmental management, we must reinforce environmental risk management at each of our production sites in order to maintain stable production.

Management via fact sheets was started in fiscal 2014 for all domestic production sites, and this has made it possible to conduct risk management for both facilities and equipment and environmental performance. We will continue to refine the fact sheet and use it not only for risk management but in energy and resource conservation activities as well.

Measures for Responding to Climate Change Risks

Risk factors	Manufacturing sites	Measure Details
Depletion of water resources	Shenzhen	We increased the water recycling ratio to 80% by introducing recycling facilities.
	Matsumoto, Zhuhai	We are purifying a portion of factory wastewater for everyday use and recycling water to meet the pure water requirements of manufacturing processes. [Related Risk : Initiatives at Matsumoto Factory]
Increases in water prices	Malaysia	As this sites uses the most water, we are stepping up water-saving measures to achieve our 30% usage volume reduction goal by 2020.
Floods	Thailand	When establishing a new factory to reinforce production systems, we chose location at high elevation to mitigate flood-related disaster risks
Blackouts resulted from torrential rain	Matsumoto, Yamanashi	We implemented response measures through a monitoring system using early weather change alerts and took steps to ensure stable electricity supplies through UPSs and in-house generation facilities for crucial equipment.
Transportation congestion or disruption resulted from torrential rain	Mie	We have established a system allowing production to be shifted to different days when large-scale disruptions to transportation, distribution, or production are forecasted prior to torrential rain.

Bolstering Environmental Activities (Operating the Green Factory / Green Office Evaluation Systems)

Activities based on an environmental management system (EMS) are the focus of Fuji Electric's environmental efforts at each of its operating locations.

Fiscal 2015 was the fifth year since the implementation of the Green Factory / Green Office Evaluation System,* introduced to implement Environmental Vision 2020 more effectively. Eight sites excluding those already designated as Green Factories received the highest Gold rating for the third consecutive year, and were therefore designated as Green Factories or Green Offices. This means that all 25 offices and factories in Japan are now Green Offices and Green Factories.

*Green Factory / Green Office Evaluation System: The Green Factory / Green Office Evaluation System evaluates ongoing improvements to environmental activities. These include elements of our business activities that relate directly to our Environmental Vision 2020, which is a guidepost to our medium- to long-term environmental activities. Specifically, the system evaluates the number of environmental products developed, the percentage of sales derived from environmental businesses, and the contribution to a reduction in society's CO₂ emissions resulting from our products. Ratings of EMS activities in terms of environment performance are made in three stages of gold, silver and bronze. A site is certified as a Green Factory / Green Office when it achieves a gold rating for three consecutive years.

Green Factory/Green Office Evaluation Factors

- Environmentally friendly products and services (number of products and services developed, sales ratio, etc.)
- CO₂ reduction (contribution during production, and by products)
- Reduced waste and efficient use of resources
- Chemical substance management and reduction of toxic atmospheric emissions
- Reduction of environmental risk and compliance
- Communication with local communities



Green Factory evaluation at Chichibu Fuji

Water and Air Pollution Prevention

In order to prevent environmental pollution, Fuji Electric has installed treatment equipment at bases that utilize chemical substances and manages the quality of water used in these bases to ensure that chemical levels do not exceed established environmental standards. We also conduct periodic emergency response drills to guarantee that we are prepared should an abnormality be detected.

Furthermore, in order to ensure compliance with environmental standards, we have equipped in-house generation equipment

(excluding emergency-use backup generators) with emission treatment equipment to limit the release of NOx into the atmosphere. We also strive to prevent the release of SOx into the atmosphere by using low-sulfur fuels.

Soil Purification

We were able to develop a complete understanding of the circumstances regarding soil and underground water pollution at all domestic production bases by fiscal 2007.

We then undertook the purification of soil at all 13 bases at which pollution levels exceeded standards. As of March 31, 2016, purification had been completed at nine of these bases, and we continue to push forward with purification measures at the remaining four bases*1. In addition, we conduct soil investigations at the timings described in the Soil Contamination Countermeasures Act of Japan*2.

Overseas, many countries are in the process of instituting laws and regulations equivalent to Japan's Soil Contamination Countermeasures Act, and we have thus begun to conduct land-use history assessments as dictated by such laws and regulations. Furthermore, we perform soil investigations prior to purchasing or selling land, whether in Japan or overseas, thereby confirming the inherent pollution risks.

*1. 4 sites: Kawasaki, Mie, Matsumoto, and Azumino (GE Fuji Meter)

*2. Timing for soil investigations: When abolishing specific facilities designated by the Water Pollution Control Act or when conducting land alterations of a defined level

Environmental Accounting

Fuji Electric introduced environmental accounting in fiscal 2000 as a key means of assessing environmental management performance. Using the 2005 guidelines released by Japan's Ministry of the Environment, we established in-house calculation methods for environmental preservation costs and benefits. Each year, we ascertain and analyze these costs and benefits and disclose this information to the public.

Stance toward Environmental Accounting Calculations

We calculate "direct benefits," such as revenue from sales of valuable items and energy conservation, as well as "estimated benefits," which is a conversion to monetary value of the energy-savings benefit from the use by customers of existing environmentally friendly products (such as vending machines and some inverters) and energy-creating products (such as solar cells and geothermal systems).

Fiscal 2015 Achievements

Environmental conservation costs totaled ¥15.95 billion, with investment at ¥1.90 billion and expenses at ¥14.05 billion. The environmental conservation benefit totaled ¥114.81 billion, including revenue from sales of valuable items at ¥1.29 billion, savings from energy conservation of ¥0.94 billion, and estimated benefits of ¥113.32 billion.

Environmental investment that went to environmental preservation costs totaled ¥0.98 billion in fiscal 2015. The main items in this effort to stop global warming and conserve energy were (1) Installation of LED lighting; (2) Installation of inverters and other energy conserving equipment at production facilities; (3) Replacement of air conditioners with more efficient models; and (4) Application of heat-resistant paint on factory roofs.

These environmental preservation measures produced savings of ¥0.55 billion, the result of the Smart Factory Initiative and environmental investment for energy and resource conservation. In addition, we estimate that the economic effect from reductions in electricity charges at customers through the use of our products was ¥113.32 billion as a result of increased sales of inverters, mega solar power conditioners, solar power systems, and electronic devices.

Environmental Conservation Costs and Benefits (Fiscal 2015)

Period covered: April 1, 2015 to March 31, 2016

Scope: 12 business sites + 21 consolidated subsidiaries (nine subsidiaries in Japan and 12 overseas subsidiaries)

Environmental Conservation Costs (Fiscal 2015)

(Millions of yen)

Categories corresponding to business operations	Main Content	Total (Compared to the previous term)	Breakdown	
			Amount invested	Expenses
Costs within the business sites		1,895 (+140)	978	917
1	Pollution prevention costs	376 (+2)	83	293
	Global environmental conservation costs	1,099 (+115)	866	233
	Materials recycling costs	420 (+23)	29	391
2	Upstream/downstream costs	9 (-1)	0	9
3	Management costs	542 (+32)	19	523

Categories corresponding to business operations	Main Content	Total (Compared to the previous term)	Breakdown	
			Amount invested	Expenses
	Costs of environmental education for employees, environmental management systems operation, monitoring and measurement of environmental impact, environmental conservation measures			
4	R&D costs	13,444 (-57)	901	12,543
5	Social activity costs	11 (0)	0	11
6	Environmental damage costs	47 (-338)	0	47
Total		15,948 (-338)	1,898	14,050

Economic Benefit of Environmental Conservation Measures (Fiscal 2015)

(Millions of yen)

Categories	Main details	Total (Compared to the previous term)
Revenue	Amount received from sale of valuable items for recycling	942 (-343)
Savings	Reduction of expenses through energy conservation, reduction of waste disposal cost, reduction of water bill through water conservation	548 (-5)
Estimated benefit	Energy reduction through the use of environmentally friendly products by customers	113,324 (+22,446)
Total		114,814 (+22,098)

Note 1: The "estimated benefit" is calculated as the economic benefit of energy savings when products with improved energy efficiency are used by customers, and is converted using the following formula:
Benefit (¥) = Σ [(annual amount of electrical power consumed by former equipment - annual amount of electrical power consumed by new equipment) × Volume shipped annually in Japan × Electrical power standard cost] (electrical power standard cost: ¥10/kWh)

Note 2: The "estimated benefit" includes environmentally friendly products (such as vending machines, inverters), and energy creation products (such as solar cells, geothermal power generators).