

Environmental Report



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Message from the Environmental Officer

Looking at Our Business Activities from a Global Perspective and Promoting Environmental Management to Reduce Our Environmental Impact

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.

Fiscal 2011 provided us with an opportunity to review how we look at energy supply and demand. We reduced energy consumption substantially by accelerating our development of products and technologies that contribute to energy conservation, performing energy-saving diagnostics in Japan and overseas bases, and stepping up our rollout of energy conservation measures across the organization.

In response to Japanese government requests to conserve electricity in the Tokyo Electric Power Co. service area, we strove to cut peak power consumption by transferring production to other locations in Japan and overseas, shifting to nighttime production, and installing high-efficiency devices. At the same time, we introduced a power monitoring system to verify our legal compliance. As a result of our activities, we succeeded in reducing peak power consumption by 41%.

As energy-related values and needs are growing increasingly diverse, in the future we believe that existing structures will need to be reformed. Fuji Electric is taking the lead in this area. In response to global environmental trends and stakeholder input, we are introducing improvements and reforms and developing energy-related business globally, based on our power electronics technologies. Through these efforts, we will contribute to the realization of a sustainable society.



Enacting Environmental Management

Fuji Electric is moving forward with the development of energy-creating and energy-conserving products, and by expanding its operations globally the Company intends to contribute to efforts to stop global warming. At the same time, we are aggressively pursuing efforts to reduce the environmental impact of our production activities, which form the base of these initiatives.

Fuji Electric has established and is constantly improving its environmental management system to promote this sort of environmental management. We have created an environmental protection system, set and are working toward environmental targets, and are reinforcing our internal audits. Simultaneously, we are striving to enhance the environmental awareness of each employee.

Introducing a Green Factory / Green Office Evaluation System to Realize the Objectives of Environmental Vision 2020

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

In fiscal 2011, we introduced a Green Factory / Green Office Evaluation System to bolster the effectiveness of our EMS activities. This system defines evaluation items for environmental activities at each business site, which are directly linked with the medium- to long-term targets in our Environmental Vision 2020. The system specifies certain business activities (such as the percentage of sales derived from environmental businesses, the number of environmental products developed, the contribution to a reduction in society's CO₂ emissions resulting from our

products), and certifies as a Green Factory / Green Office each business site that achieves the top "gold" level for three years in succession.

Through these activities, we are augmenting efforts at each business site toward the achievement of our Environmental Vision 2020 objectives.

In the current fiscal year, we used this system to evaluate 28 EMS business sites in Japan. A total of 25 sites received a "gold" rating for having made improvements in all categories year on year, and no site earned a lower evaluation than in the preceding fiscal year. Going forward, we will endeavor to ensure that all business sites earn a "gold" evaluation.



On-site inspection of Green Factory / Green Office evaluation at Kawasaki Factory

Green Factory / Green Office Evaluation Factors

- Environmentally friendly products and services
- CO₂ reduction
- Reduced waste and efficient use of resources
- Reduction of chemical substance and toxic atmospheric emissions
- Reduction of environmental risk and compliance
- Communication with local communities

Mapping Environmental Risks to Make Environmental Risks Visible and Reinforce Risk Management in Our Business Activities

To promote environmental management, we believe that in addition to the environmental contribution of our products, we must reinforce risk management at each of the business bases that make these products and maintain stable production systems. To this end, we have created an "environmental risk map" for all our production bases in Japan.

This map contains historical data for each business base (such as their history of using chemical substances, history as legally specified facilities, and history of building extensions or reconstruction), thereby recording the background of each division.

We use this map when conducting environmental inspections at business bases to make local confirmation more effective and enhance risk management.

Going forward, we plan to add information about the utility of plant facilities and equipment that uses energy. Making visible the extent to which each business base uses water, electricity, gas, and other resources should contribute to energy and resource conservation efforts at each business base.

1. Stop Global Warming

Fuji Electric provides products and services that contribute to the creation and conservation of energy. We also strive to conserve energy at our factories and other operational sites. In this manner, we are promoting the reduction of CO₂ emissions on a global scale and helping to stop global warming.

Reducing CO₂ during Production

Fuji Electric is participating in the voluntary action plan targets for the industry set by four electronics industry associations*1 to help achieve Japan's goals for reducing CO₂ emissions during the target period (fiscal 2008–2012).

In fiscal 2011, we introduced thorough measures in response to the call to conserve electricity in the wake of the Great East Japan Earthquake.

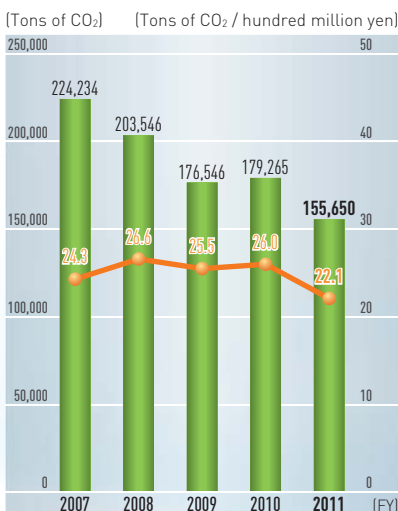
To reduce peak power consumption, we installed high-efficiency devices (inverter systems, lighting, and air conditioning), shifted to a nighttime production schedule, introduced in-house power generation and used backup

generation equipment, increased our number of summer holidays, and extended the period for "Cool Biz" (light attire). We also installed power monitoring systems at all operational sites in the Tokyo Electric Power Co. service area so that we could monitor electricity use in real time and confirm legal compliance*2.

*1 The Japan Electronics and Information Technology Industries Association, the Communications and Information Network Association of Japan, the Japan Business Machine and Information System Industries Association, and the Japan Electrical Manufacturers' Association

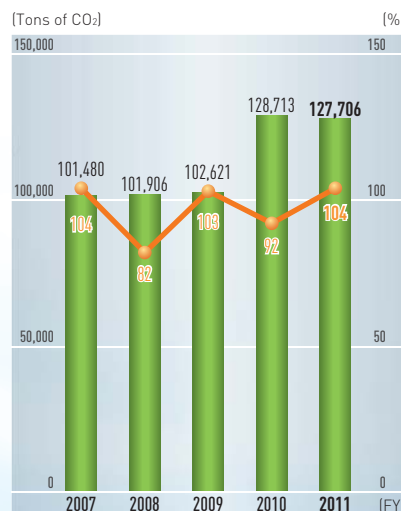
*2 Order to limit use of maximum electricity to 15% less than summer 2010 levels

CO₂ Emissions and CO₂ Emissions per Unit of Sales in Japan



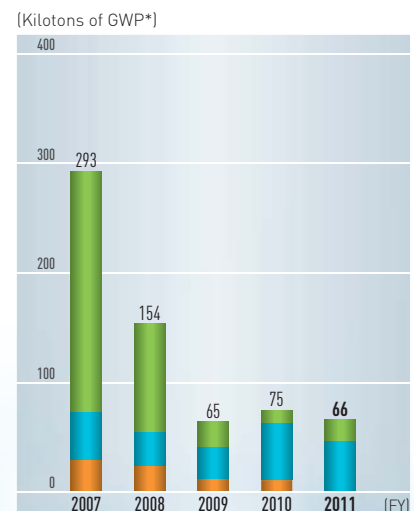
■ CO₂ Emissions (left)
● CO₂ Emissions per Unit of Sales (right)

Overseas CO₂ Emissions per Unit of Sales



■ CO₂ Emissions (left)
● CO₂ Emissions per Unit (FY2006 = 100) (right)

Domestic Greenhouse Gas Emissions Other than CO₂



■ SF₆ ■ PFCs ■ HFCs

* Global warming potential (GWP) measures the relative greenhouse effect caused by a gas compared with CO₂, which is assigned a GWP value of 1.

PRIMARY INITIATIVES

Promoting Efforts to Make Electrical Power Use Visible and Conserve Energy

At the Otawara Factory, we installed the F-MPC System—a power monitoring system made by Fuji Electric—to promote energy conservation and ensure that our use of electricity remained within our contracted amount, with full-fledged operations commencing in fiscal 2011. This system makes electricity use visible at 150 measurement points on production equipment and lines throughout the factory. Its use led us to completely reconsider the need for air conditioning and lighting equipment, particularly at night or on holidays, thereby lowering power consumption. Consequently, we succeeded in reducing the equivalent of 50 tons of CO₂ per year.

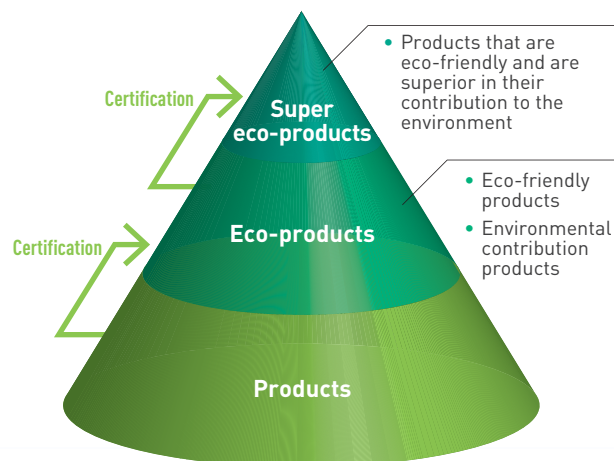


F-MPC System

Contributing to Reduced CO₂ Emissions through Products

Fuji Electric evaluates the degree of product environmental contribution and eco-friendliness on a companywide 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, or which are recognized outside the Company at the national level for environmental superiority are labeled “super eco-products.”

In fiscal 2011, our eco-product sales ratio was 40.9%, up from 32.1% in fiscal 2010. This indicates that using products we sold in fiscal 2011 for a one-year period would contribute to a 772,000-ton reduction in CO₂ emissions.



Eco-Product Definitions

Eco-Friendly Products	Products that have a reduced environmental impact over the entire product lifecycle, from the use of raw materials, the procurement and production of components, and through distribution, use, disposal, and recycling UPSs, vending machines, IGBT modules, etc.
Environmental Contribution Products	Products that contribute to environmental preservation during use Geothermal power generation systems, energy monitoring equipment, inverters, etc.

SUPER ECO-PRODUCTS

Industrial Fuel Cells Contributing to Reduction in CO₂ Emissions

Fuel cells supply clean energy. As they use oxygen and hydrogen to generate electricity and emit only water, emissions of harmful substances that could lead to environmental pollution are essentially zero. Furthermore, harnessing the heat that fuel cells emit when generating electricity to heat water can lead to reduction of 680 tons of CO₂ emissions per year.

Fuji Electric’s industrial fuel cells retrieve hydrogen from city gas and generate electricity. However, if a disaster or other situation interrupts the supply of city gas, the fuel cells can be switched to the use of LP gas, enabling them to be used for backup power generation.



Introduced at the Kawasaki and Fukiage Factories in fiscal 2011

Products that Reduce CO₂ Emissions

Fuji Electric has established Eco-product Certification Standards for products that contribute to society-wide reductions in environmental impact.

Here, we will introduce some of Fuji Electric's eco-products that help prevent global warming by reducing CO₂ emissions.



Power Plants Geothermal Power Generation Facilities

Geothermal power is energy generated using the geothermal steam created by subterranean magma. As geothermal power generation does not require the burning of oil or coal, CO₂ emissions are substantially lower than those from thermal power generation. Furthermore, this power source is able to provide supplies of electricity that are more stable than other renewable energy sources.

**CO₂ emissions reduction:
Approx. 378,000 tons / year**
[Compared to thermal power generation]



Wayang Windu Geothermal Power Station in Indonesia



Factories Inverters

Inverters are used in a wide variety of equipment, including elevators, building air conditioning systems, and factory manufacturing facilities. By optimally controlling the rotation speed of the motors that move such equipment, inverters eliminate energy loss during operation and contribute to energy savings.

**CO₂ emissions reduction:
Approx. 10.3 tons / year
(50.2% reduction)**
[Compared to damper control]



Data Centers Local Air Conditioning Systems

Data centers consume extraordinary amounts of electricity. Fuji Electric's local air conditioning systems help identify localized heat accumulations to provide efficient cooling for these facilities.

**CO₂ emissions reduction:
Approx. 294 tons / year
(51.5% reduction)**
[Compared to underfloor air conditioning systems]



Office Buildings UPSs

Equipped with batteries, UPSs protect computers and factory equipment from power outages. We have created UPSs that realize world-leading levels of power conversion efficiency at 98.5%, thus contributing to energy savings.



**CO₂ emissions reduction:
Approx. 103 tons / year
(82.4% reduction)**

[Comparison between models released in fiscal 2006 and those released in fiscal 2011]



Stores Building Energy Management Systems



Building energy management systems are used to monitor and efficiently control energy usage in stores and other buildings. By employing combinations of renewable energy systems and storage batteries, these management systems help equalize electric power loads.

**CO₂ emissions reduction:
Approx. 20 tons / year
(8.1% reduction)**

[Benefit from introducing Fuji Electric's building energy management systems]



Automobiles IGBTs

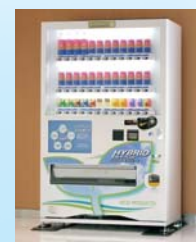
IGBT modules are a type of power semiconductors. They are used in inverters, EVs, and the power conversion equipment of wind and solar power generation facilities, and are essential to realizing energy savings.

**CO₂ emissions reduction:
Approx. 75 kg / year
(13.0% reduction)**

[Comparison between the S-Series and the V-Series]

Vending Machines

Fuji Electric's vending machines employ heat pump technologies, nonfluorocarbon refrigerants, and state-of-the-art vacuum insulation materials. By combining these features with light-emitting diode (LED) displays, we have created ultra-energy-efficient vending machines that realize substantial reductions in electricity consumption.



**CO₂ emissions reduction:
Approx. 332 kg / year
(49.4% reduction)**

[Comparison between models released in fiscal 2006 and those released in fiscal 2012]

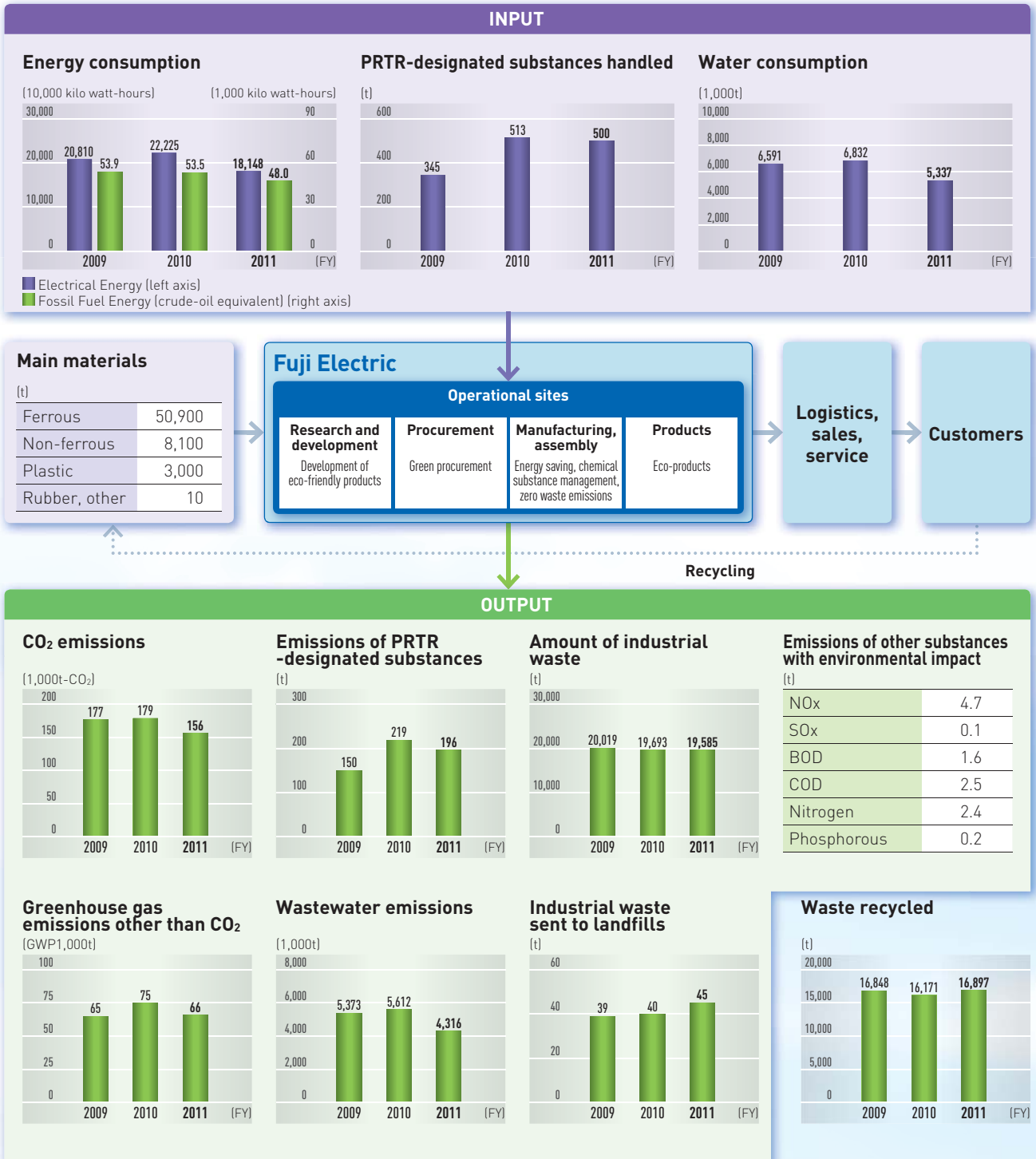
* Information regarding the methods used to calculate CO₂ emission reductions can be found on Fuji Electric's website.

2. Creating a Recycling-Oriented Society

Fuji Electric is promoting the 3Rs (reduce, reuse, recycle) in its products and working to expand the number of eco-friendly products for energy-creating and energy-conserving. At the same time, we are contributing to the creation of a recycling-oriented society by striving for zero emissions at our operational sites.

Our efforts targeting zero emissions focus on attaining the goal of zero waste—a ratio of waste sent to landfills to total waste of no more than 1%. These activities promote waste reductions and resource recycling. From fiscal 2011, we have set our goal as 0.5%. We outperformed against this target, with a ratio of 0.2%.

Interplay between Business Activities and Environmental Impact in Japan



EXAMPLES OF INITIATIVES

MATSUMOTO FACTORY IN JAPAN

Reusing Wastewater from Semiconductor Production Processes

Semiconductor production consumes large amounts of pure water by process such as product cleaning. Therefore, we have mounted a proactive effort to reuse the pure water emitted by the Matsumoto Factory, which manufactures these products.

In the past, we used equipment to process wastewater that had not lost its level of purity, reusing this water in production processes. In fiscal 2011, equipment within the factory also began reusing water with a lower degree of purity, following confirmation of its commercial viability. We process wastewater having a lower level of purity through microfiltration membranes and other equipment, using it in cooling towers and for general use within offices. These efforts have reduced our water requirements by approximately 1,000m³ per day.



From the left
Yoshiharu Kato, Tadataka Izutani,
Makoto Miyazawa,
Environment & Facility Planning
Department, Matsumoto Factory

FUJI ELECTRIC (CHANGSHU) IN CHINA

Efforts to Reduce Emissions of Metal Waste and Reuse Resources

Fuji Electric (Changshu) Co., Ltd., resells “punch plate”—the magnetic sheet steel and other metals that are generated during the press process when manufacturing magnetic contactors and thermal relays—and reuses such materials as resources. Through its thorough quality improvement and waste reduction activities, the company is also boosting yields, reducing the amount of waste that is generated. These efforts have earned the company high praise from its environmental ISO audit institution, the China Association for Standardization.



Punch plate generated during the
press process

TSUKUBA FACTORY IN JAPAN

Community Welfare Facilities and Environmental Protection Activities

In 2011, the Tsukuba Factory, which makes uninterruptible power supply systems (UPSs) and backup power generation equipment, began cooperating with the nearby Asunaro Society, a social welfare corporation, to reuse as resources irreparable or discarded products that had previously been processed as industrial waste.

We have consigned the disassembly and separation of these products to the Asunaro Society, which conducts these activities at a workplace set up inside the Tsukuba Factory. In 2011, these efforts led to the 100% effective use of such resources as the factory's discarded batteries and metal scrap, reducing its industrial waste emissions 59% from the preceding year. Furthermore, the commission paid to the Asunaro Society, balanced against the revenue generated by selling on these resources, led to a 30% reduction in processing costs.

We have begun working with the Asunaro Society, which strives to provide work opportunities for people with disabilities, on environmental protection and community contribution initiatives. We plan to continue these activities going forward.



Consigning the disassembly and
separation of products to a social
welfare corporation