Renesas Electronics

ENVIRONMENTAL REPORT 2017

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How to Use

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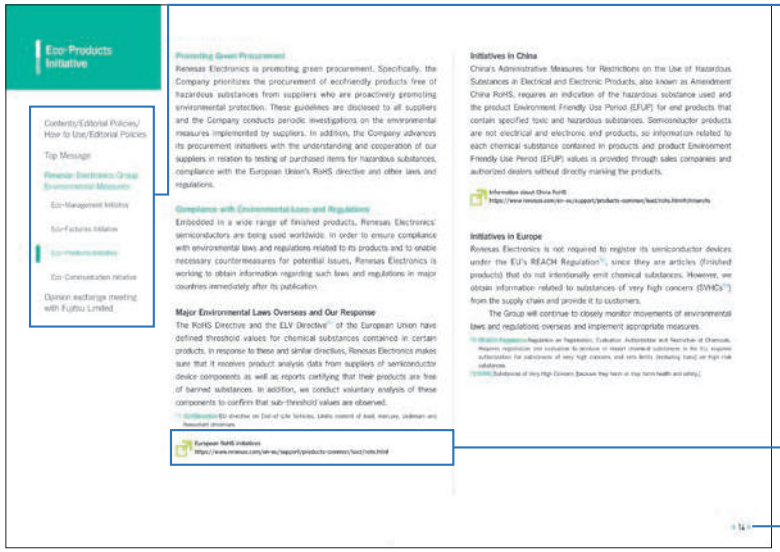

Category tab

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Link button

European RoHS initiatives
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Editorial Policies

This Environmental Report is intended for the many stakeholders of the Renesas Electronics Group, including employees, customers, members of the local communities where we conduct business, suppliers, partners, shareholders and investors. With the objective of promoting two-way communication between the Company and these stakeholders, this report explains our approach to the environment and illustrates our specific activities in an easy-to-understand fashion.

Guidelines Used

- Environmental Reporting Guidelines 2012 (Ministry of the Environment, Japan)
- Environmental Accounting Guidelines 2005 (Ministry of the Environment, Japan)
- ISO 26000: 2010 Guidance on Social Responsibility (Japanese Standards Association)

Reporting Scope

The report covers the Renesas Electronics Group, which consists of Renesas Electronics Corporation, 5 domestic Group companies and 22 overseas Group companies.

In this Environmental Report, we use the fiscal year, which ends on the last day of March until FY 2015. Note that from 2016 is a period of transition for International Accounting Standards. Refer to the example below.

Example: Japanese notation, English notation (Period)

2015-Nendo, Fiscal 2016 (April 1, 2015 to March 31, 2016)
2016-Nendo, 2016** (April 1, 2016 to December 31, 2016)
CY 2016 (January 1, 2016 to December 31, 2016)
2017-Nendo, 2017** (January 1, 2017 to December 31, 2017)

Reporting Period

This report primarily covers the period from January 1, 2016, to December 31, 2016, and includes reports on certain subsequent activities.

Publication Date

July 2017 (Next issue: Scheduled in July 2018)

We will contribute to a sustainable society by supplying energy efficient, environmentally friendly products.

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Semiconductor products from Renesas Electronics Group contribute to society by providing low power consumption and high functionality for customers in the automobile and industrial equipment industries. For example, the role of semiconductor devices in the automobile industry is growing larger than ever as demand for automatic drive control systems, engine control systems, and electric vehicles and electric motor/gasoline engine hybrid systems for fuel efficiency increases. In addition, our products contribute to the suppression of CO_2 emissions from automobiles. Furthermore, the Company's semiconductor products provide functionality to maximize the energy efficiency of our customers' equipment in fields other than automobiles, such as industrial equipment and household appliances. Beside this functionality, semiconductor products comply with the various environmental laws and regulations throughout the entire product lifecycle from the design stage to the disposal stage. Therefore, the customer can confidently use these devices.

Meanwhile, the semiconductor manufacturing process consumes a substantial amount of energy because of the high-tech equipment used for the fabrication of fine elements in a clean room where dust is eliminated, and an extremely high degree of cleanliness is achieved. In addition, many different chemical substances are used, thus the environmental load from production activities is quite heavy. Therefore, in our factory, we have proceeded with the introduction of more energy efficient equipment, improvement in the efficiency of material use, and installation of pollution abatement facilities. Furthermore, we implemented strict self-regulatory standards, which are stricter than government regulations, for the waste generated from our factory as we strive to maintain and manage the environment of the local community.

The Renesas Electronics Group will continue supplying high-quality, environmentally friendly products made in clean, highly efficient manufacturing sites. In addition, we are convinced that the technological evolution obtained through the Group's semiconductor device will directly contribute to the realization of a sustainable society.

This report summarizes the Group's environmental activities and its future outlook. The contents include the objectives and outcomes of all environmental activities throughout the processes of development, manufacturing, and sales, as well as the use and disposal of our products by the customer. We hope this report will help you understand our environmental activities, establish better communication with you, in order to garner more effective environmental activities.

Masahiko Nozaki
Executive Vice President, Environmental Officer

Corporate Outline

Company Name	Renesas Electronics Corporation
Established	November 1, 2002 (Started operation on April 1, 2010 as Renesas Electronics Corporation)
Representative Directors	Tetsuya Tsurumaru, Representative Director, Chairman Bunsei Kure, Representative Director, President and CEO
Major Operations	Research, development, design, manufacture, sale, and servicing of semiconductor products
Headquarters	TOYOSU FORESIA, 3-2-24 Toyosu, Koto-ku, Tokyo 135-0061, Japan
Capital Stock	10 billion yen
Employees (consolidated)	Approximately 18,884 (Consolidated as of December 31, 2016)
Stock Listing	Tokyo Stock Exchange, First Section (Securities Code: 6723)

Renesas Electronics Group Environmental Measures

Stance of the Renesas Electronics Group

Recently, the environmental activities of companies vary from pollution prevention, reductions in greenhouse gases and waste material, to compliance with regulations of chemical substances and hazardous substances contained in products. The Renesas Electronics Group works to reduce the environmental load from production activities as guided by the common objective of the industry association. We develop and supply environmentally friendly products that help to increase the environmental performance of customers' products. The annual policies and objectives of these environmental activities are discussed by the Environmental Promotion Committee, which is chaired by the director in charge of environmental operation, and will be announced to the whole group.

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Environmental Policy

We will contribute to the harmonization of society and the environment in the course of our business activities.

Action Guidelines

1. We will incorporate environmental considerations into all stages of the product life cycle, including research & development, design, procurement, production, sales, logistics, use and disposal.
2. We will strive to prevent pollution as well as to minimize the impact of our products on the environment. When environmental problems arise, we will take appropriate steps to minimize the environmental impact and disclose accurate information.
3. Our environmental management efforts will involve compliance with all environmental laws, regulations and agreements, and we will promote compliance activities.
4. We will disclose environmental information to stakeholders and encourage communication with society for the purpose of promoting mutual understanding.
5. We will educate all employees in environmental conservation to create a company culture that promotes harmony between the environment and business activities.

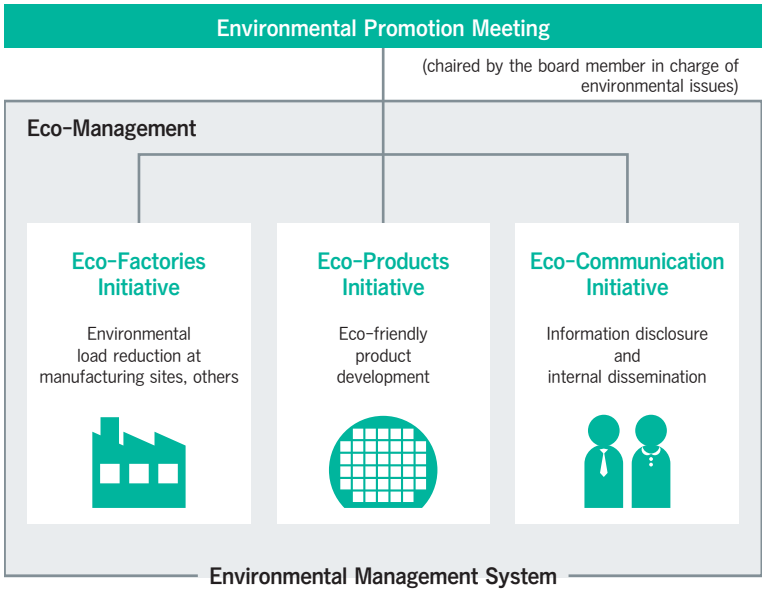
Three Environmental Cornerstones of Renesas Electronics

Some of the key issues for our environmental measures are 1) legal compliance, 2) reduction of our environmental burden, 3) the development of ecofriendly products and 4) maintaining good relations with stakeholders.

We are tackling these issues through environmental management, in which all employees participate. Such management is based on an Eco-Management system, built on the cornerstones of our Eco-Factories, Eco-Products and Eco-Communication Initiatives.

- **Eco-Factories Initiative:** Aimed at reducing the environmental impact of manufacturing sites through the reduction of greenhouse gases (GHG) and the appropriate management of chemical substances in manufacturing processes
- **Eco-Products Initiative:** Aimed at supplying eco-friendly semiconductors produced with environmental considerations in mind throughout their life cycles, including the control of chemical substances contained in products and the development of products with excellent energy-saving performance
- **Eco-Communication Initiative:** Aimed at strengthening employee awareness through environmental education and disseminating the Group's environmental information to society

Three Environmental Cornerstones of Renesas Electronics



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Achievements of 2016** and targets for 2017**

Item	Targets for 2016**	Results of 2016**	Evaluation	Targets for 2017**
Eco-Management	●Obtain integrated domestic certification	●Obtained integrated domestic certification	◎	●Renew certification for ISO 14001:2015
Eco-Factories Initiative	●Reduce 4% or more from benchmark year (Energy consumption per sales)	●Reduced 19% from benchmark year (Energy consumption per sales)	◎	●Reduce 5% or more from benchmark year (Energy consumption per sales)
	●Maintain PFC*1 emissions level of 2015 (unit per wafer area)	●Reduced PFC emissions by 0.01 GWP*2-kg/cm^2 (unit per wafer area)	◎	●Reduce PFC emissions from the results of 2015 (unit per wafer area)
Eco-Products Initiative	●Address the various domestic and foreign regulations appropriately	●Addressed the various domestic and foreign regulations and self-regulatory substances	◎	●Address the various domestic and foreign regulations appropriately
Eco-Communication Initiative	●Publish an electronic version of the Environmental Report	●Published an electronic version of the Environmental Report	◎	●Publish an electronic version of the Environmental Report
	●Provide 2016** environmental e-learning and follow up participation rate	●Conducted 2016** environmental e-learning. Attained 98.8% participation rate	◎	●Provide education for the sales department ●Provide environmental e-learning
	●Continue environmental and social contribution activities	●Implemented activities (Please refer to pages 15 and 16.)	◎	●Continue environmental and social contribution activities

*1 PFC: Perfluoro Compounds: (The semiconductor industry has specified CHF_3, CF_4, C_2F_6, C_3F_8, C_4F_8, SF_6 and NF_3 for emissions reduction.)
*2 GWP: Global Warming Potential: a coefficient indicating how much a given mass of greenhouse gas is estimated to contribute to global warming (CO_2=1)

Eco-Management Initiative

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The Group's Business Activities and Environmental Footprint

The semiconductor products and solutions offered by the Renesas Electronics Group help our customers make their own products and systems smaller and more energy efficient. This boosts protection of the global environment by helping to prevent global warming and use resources effectively.

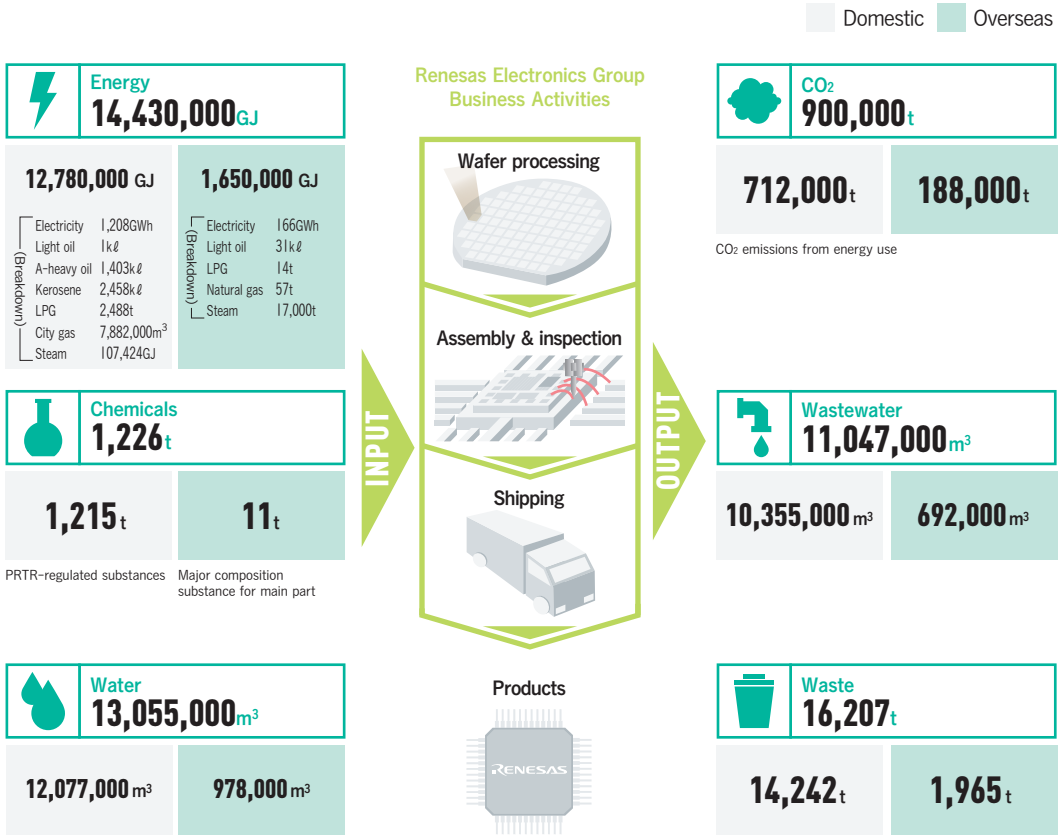
On the other hand, it is true that production activities place a large burden on the environment. They consume energy (electric power, fuel, etc.) and resources (chemicals, water, etc.) while producing waste in solid, liquid, and gaseous forms.

We are attempting to reduce our environmental impact by conducting detailed measurements of our volume of input and output from production to distribution, and making planned reductions.

The Renesas Electronics Group is committed to using limited resources and energy in an effective manner and to offering eco-friendly products that are manufactured efficiently.

The environmental data of 2016** are based on this fiscal with a period of nine months.

Overview of Environmental Footprint



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Compliance system for environment related laws and internal audits of the environment management system

The Renesas Electronics Group's Basic Rules of Management set out the Environmental Policy and Basic Rules of Environmental Management. Following these guidelines, all of our bases, including affiliated companies, established their own environmental management system and are proceeding with environmental management activities. Each year, we audited the environmental management system of each base to monitor continuous improvement of performance. In 2016**, we audited 14 sites including the overseas sites. As a result, 141 recommendations including 63 requests for improvement were extracted, and improvement actions were taken. To maintain highly reliable audits, our audits are conducted by CEAR*1-certified qualified auditors. Furthermore, in response to environmental laws and regulations, which are becoming stricter every year, we have constructed an information-sharing system and are monitoring the system and the compliance status of all sites.

Audit for outside the production facility

Audit for production line

*1 CEAR: Center of Environmental Auditors Registration

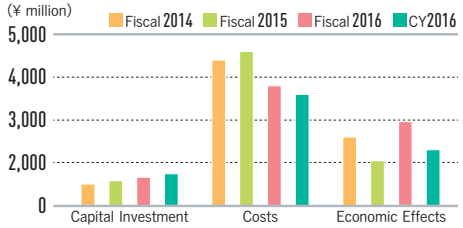
ISO 14001 Certified

All domestic sites, overseas manufacturing sites, and major overseas sales base groups have been certified under ISO 14001, which is the international standard for environmental management systems. The group will continue the process of acquiring and sustaining ISO 14001 certification as efficiently and effectively as possible. Furthermore, the implementation of measures to comply with ISO 14001:2015 was completed in 2016**, and we started new management policies to satisfy the newly revised requirements since the beginning of 2017**.

Environmental Accounting

Major investments in CY2016 were made in soil contamination prevention, water pollution prevention, and drainage facilities. We installed an exhaust heat recovery system, inverters for various pumps, and LED lighting as energy saving measures and have enhanced the efficiency of the air conditioning system and freezers. Expenses were ¥515 million, ¥1,389 million, and ¥548 million for air pollution prevention, soil and water pollution prevention, and waste disposal, respectively. The economic effect includes profit from the sale of waste, which amounted to ¥732 million. The figure does not include the calculated amount based on estimations.

Environmental Accounting Trends



Result of CY2016 From January 1, 2016, to December 31, 2016

Item		Description	Cost of environmental protection		Effectiveness	
			Investment (¥ million)	Expense (¥ million)	Economic effect (¥ million)	Environmental load reduction
Within business sites	Pollution prevention	Pollution prevention (air, water, etc.)	611	1,934	29	Energy saving 87.6GWh
	Global environmental conservation	Energy saving measures, global warming prevention, etc.	682	649	1,442	
	Resource circulation	Efficient use of resources through waste reduction, water saving, recycling, etc.	7	659	796	
Upstream/Downstream		Green procurement, Product assessments, Collection and recycling of packing material	0	0	—	
Management activities		Maintenance, operation, education, etc. of environmental management	0	415	—	
R&D		R&D for reducing the environmental load of products and production process	0	0	—	
Social activities		Donation and support for local community volunteer activity and environmental protection group	0	8	—	
Environmental damage		Cost for compensation concerning soil and groundwater pollution recovery and environmental conservation.	0	4	—	
Total			1,300	3,669	2,267	—

Eco-Factories Initiative

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Global Warming Prevention through Energy Conservation

To prevent global warming, the Renesas Electronics group in Japan actively takes part in the energy saving activities of the semiconductor industry. To achieve the target of the electric appliance and electronics industry and the reduction target of the Energy Conservation Act, the group continuously promotes energy conservation activities.

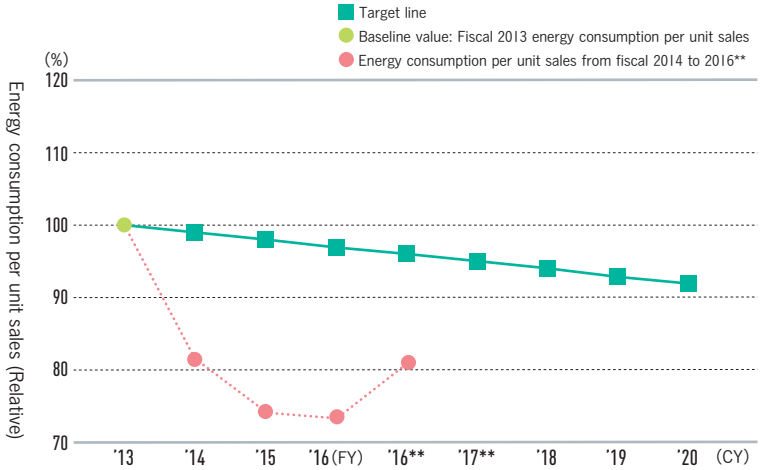
Reducing Energy

The Renesas Electronics group in Japan has participated in the Commitment to a Low Carbon Society, which Japan's electrical and electronics industries has undertaken since fiscal 2014. Under the commitment, the baseline value for a business is the value for fiscal 2013 and its target is to reduce energy consumption from the baseline by an average of 1% per year through fiscal 2021 (7.73% decrease compared to the value in fiscal 2013).

Results of 2016** Reductions

Energy consumption in 2016** was reduced by 19% from the benchmark year; however, it also increased by 7 points from the previous year (fiscal 2016). The assumption is that energy consumption per sales increased compared to fiscal 2016 because of the increase in production.

Energy consumption per unit sales



*Fiscal 2013 to 2016: April to March (12 months), 2016**: April to December (9 months)

Because the electric power supply is forecast to remain tight in 2017** and beyond, we will continue to actively take measures that focus on energy conservation as we strive to cut CO_2 emissions. We will continue the fight against global warming through our membership in the Commitment to a Low Carbon Society, a group in which the electrical and electronic industry associations participate.

Energy Reduction on Production Lines

We are also working toward achieving our energy conservation target under the Law Concerning the Rational Use of Energy, and therefore on our production lines we seek to reduce the rate of energy consumption by 1% year on year. Specifically, we have systematically taken such measures as putting air conditioners, pumps, fans, etc. under inverter control, replacing lighting with LEDs, and chillers and boilers with energy-saving models. We are also optimizing equipment operation based on our production volume.

Implemented key measures in 2016**

Considering the effectiveness of energy conservation and investment, we prioritized measures with higher effectiveness. Key measures implemented in 2016** are listed below.

- Replaced lighting with LED lighting
- Increased the efficiency of air-conditioning systems
- Made the freezers more efficient
- Made the pumps more power efficient
- Suspended facility installation plan

Reduced CO_2 emissions by revising the humidification system for the clean room air conditioning (Yamaguchi Factory)

CO_2 emissions have been reduced by 800 tons per year by changing the humidification system from a direct boiler steam atomizer to spraying deionized water using clean dry air.

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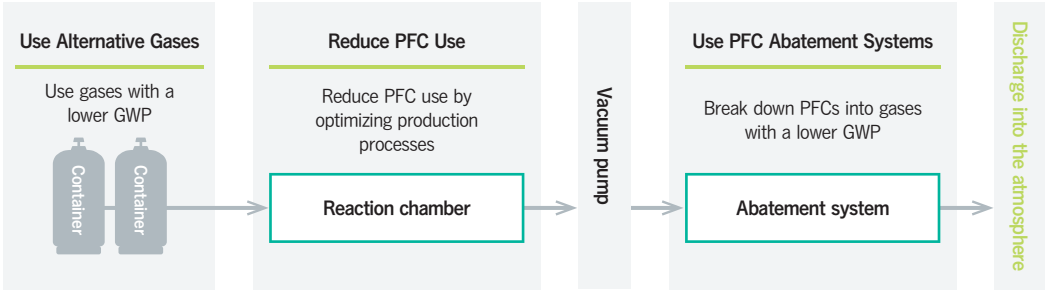
Reducing GHG Emissions

The Renesas Electronics Group uses PFC*1 gas, which is a greenhouse gas, primarily as a reaction chamber cleaning gas for semiconductor production processes. These gases do not readily decompose, and since their global warming potential (GWP*2) is between 7,000–20,000 or even higher, it is critical to reduce these emissions. The Group has therefore set PFC gas emission reduction targets and is actively working to help prevent global warming. Methods of reducing the greenhouse effect of PFC gases include 1) switching to gases with a lower GWP, 2) optimizing processes to reduce the volume of PFC gases used, and 3) installing abatement systems that remove PFC gases to break them down. The Group has been developing technology to cut emissions to 90% or lower in 2010 as compared to 1995, using a combination of these three techniques.

In 2016**, we promoted the reduction of greenhouse gas emissions based on previously set targets. The volume of PFC gas emissions per wafer area was reduced by 0.01 GWP-kg/cm^2 compared to fiscal 2016, even though there was difference in production volume. The total amount of emissions was approximately 17% of fiscal 1996. Emissions of greenhouse gases have been decreasing steadily since fiscal 2009 because of the continuous reduction activity. We will strive to achieve further reductions in 2017** and beyond.

*1 PFC: Perfluoro Compounds: (The semiconductor industry has specified CHF_3, CF_4, C_2F_6, C_3F_8, C_4F_8, SF_6 and NF_3 for emissions reduction.)
*2 Global Warming Potential: a coefficient indicating how much a given mass of greenhouse gas is estimated to contribute to global warming (CO_2=1)

GHG Emissions Reduction Image



PFC Gases and GWP

PFC gas	GWP
CF_4	7,390
C_2F_6	12,200
C_3F_8	8,830
C_4F_8	10,300
CHF_3	14,800
SF_6	22,800
NF_3	17,200

*2006 IPCC Guidelines*3

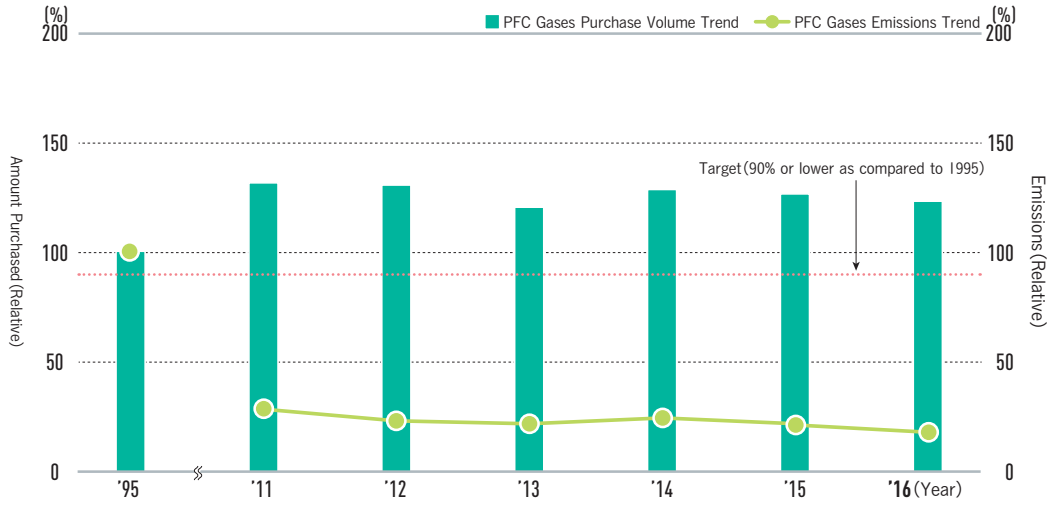
*3 IPCC: Intergovernmental Panel on Climate Change

PFC Gases Subject to Reduction Initiatives

Gases subject to reporting under the Act on Promotion of Global Warming Countermeasures	Seven gases subject to reduction by the semiconductor industry
CO_2 (carbon dioxide)	Controlled as CO_2 attributable to energy use
CH_4 (methane)	Not covered
N_2O (nitrous oxide)	Not covered
HFC (hydrofluorocarbon)	CHF_3
PFC (perfluorocarbon)	CF_4, C_2F_6, C_3F_8, C_4F_8
SF_6 (sulfur hexafluoride)	SF_6
NF_3 (nitrogen trifluoride) *4	NF_3

*4 NF_3: Subject to reporting from fiscal 2016

PFC Gases Purchase Volume and Emissions Trends



*From CY1995 to CY2016: January to December

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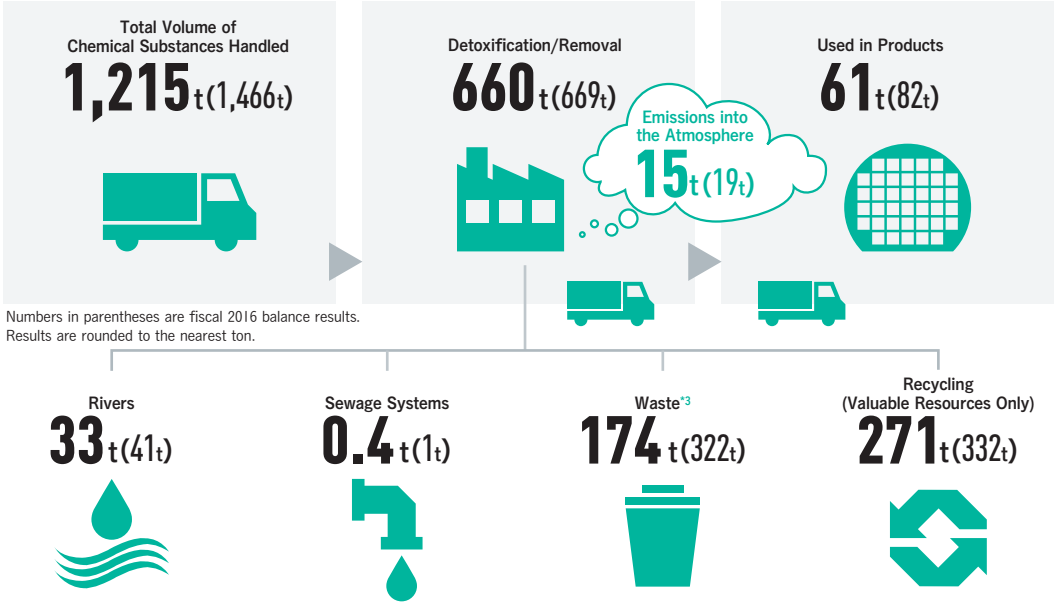
Chemical Substance Management

The Group conducts various assessments of the chemical substances it uses, based on its chemical substance database compiled through green procurement activities and the acquisition of information about related laws and regulations. The Group strives to accurately understand and reduce the total volume of chemical substances used and manages the volume of hazardous chemical substances used and their emissions. In this manner, we are pursuing research and development for green products and eco-factories. Under risk management, we practice material-balance management without rounding down figures on the amount of PRTR*1-regulated chemical substances and VOCs*2 we handle. The results of this material-balance management are reported to the relevant authorities, and are also analyzed and utilized in our activities to promote the use of alternative substances and reduce chemical substance emissions.

*1 Pollutant Release and Transfer Register Law: (A law concerning the monitoring of emissions of specified chemical substances into the environment and their management)
*2 Volatile Organic Compounds

Input and output of PRTR-regulated Chemical Substances in 2016**

* Fiscal 2016: April to March (12 months), 2016**: April to December (9 months)



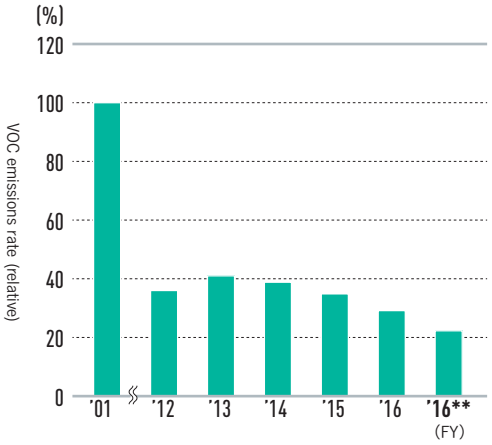
*3 Includes waste for recycling at the Company's expense.

Reducing VOC Emissions

In the Renesas Electronics Group, VOCs such as isopropyl alcohol and xylene are released from factories only after they have been rendered as harmless as possible by equipment that processes organic gas emissions. Along with this, we optimize production processes and use production equipment effectively as we endeavor constantly to lower VOC emissions.

VOC emissions for 2016** were reduced to an amount 22% of fiscal 2001 (approximately 30%, when converted to a 12-month basis). This showed that our measures so far produced favorable results. We will actively continue making efforts for further reductions in VOC emissions through the optimization of our fabrication process.

VOC Emissions Trend



* Fiscal 2001 to 2016: April to March (12 months), 2016**: April to December (9 months)

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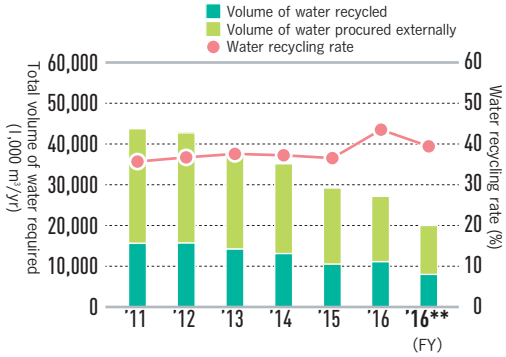
Conserving Water Resources

The Renesas Electronics group in Japan promoted water conservation by recycling and reusing water. The volume of water supplied in 2016** was 12,077,000 m^3 and the recycling rate was 39.2%.

Domestic Water Consumption and Recycling Rate



Total volume of water required = volume of water recycled + volume of water procured externally
Water recycling rate = volume of water recycled ÷ total volume of water required × 100

* Fiscal 2011 to 2016: April to March (12 months)
2016**: April to December (9 months)

Environmental Measures in Logistics Operations

The Renesas Electronics group in Japan implemented a variety of different environmental measures for its logistics operations. These included energy reduction for the transport of products and waste, reduction of packing materials for products, reuse of packing materials, and the switching of company vehicles to fuel-efficient cars. Pursuant to the Act on the Rational Use of Energy, which stipulates specified consignor obligations, we promoted the reduction of CO_2 emissions in our logistics operations. We will continue our efforts to reduce energy use in logistics operations in 2017** and beyond.

Domestic shipping volume

Fiscal Year	Renesas Electronics	Totals for Each Group Company
2013	11.78 million ton-km	6.69 million ton-km
2014	8.62 million ton-km	5.66 million ton-km
2015	7.65 million ton-km	5.05 million ton-km
2016	6.36 million ton-km	5.02 million ton-km
2016**	3.87 million ton-km	2.91 million ton-km

* Fiscal 2013 to 2016: April to March (12 months), 2016**: April to December (9 months)

Waste Management

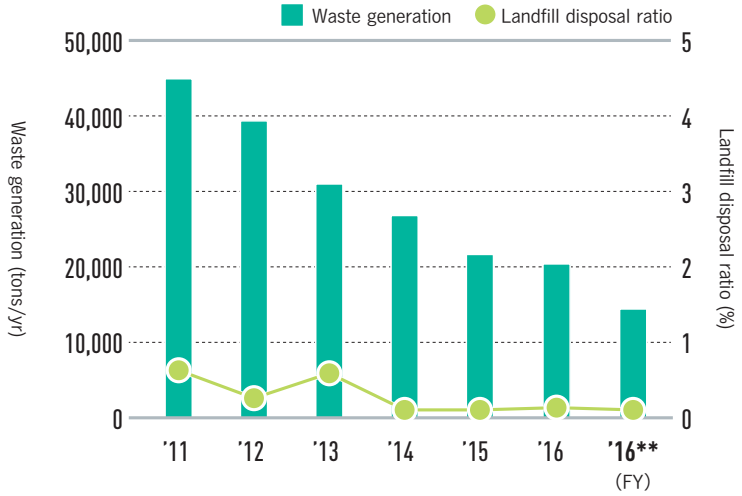
The Renesas Electronics group in Japan set the target for fiscal 2016 as maintaining zero emissions (less than 1% of final disposal ratio) and worked to reduce waste. As a result, the group achieved 0.08% of the final disposal ratio as a percentage of unrecyclable final disposal of total waste.

Additionally, we practiced strict legal compliance and continued to periodically visit our industrial waste processing contractors to ensure that they were processing waste appropriately.

The Group practices strict storage, management and reporting of equipment that uses PCBs[*1], in accordance with the law. Furthermore, we aim for complete disposal in a safe and secure manner within the legally mandated period. We are promoting disposal according to the basic policy of the Japanese government, through entrustment of disposal of high-concentration PCB waste to the Japan Environmental Storage & Safety Corporation (JESCO), and entrustment of disposal of waste containing low concentrations of PCB to accredited detoxification facilities.

*1 PCB : Polychlorinated Biphenyl

Domestic Waste Generation and Landfill Disposal Ratio



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Protecting the Ozone Layer

The Montreal Protocol on Substances That Deplete the Ozone Layer classifies ODSs*1 into Class I (CFCs*2, etc.) and Class II (HCFCs*3). The Group has completely eliminated the use of all of these from our production processes.

Furthermore, we are systematically reducing the use of CFCs used as refrigerants in chillers, refrigerators, air conditioners and other equipment and replacing them with alternative substances in line with Montreal Protocol program. We are also recovering ODSs when affected equipment is scrapped and making sure these substances are destroyed.

*1 Ozone-depleting substances *2 Chlorofluorocarbons
*3 Hydrochlorofluorocarbons

Overseas Initiatives

The Renesas Electronics Group's overseas manufacturing sites conduct environmental initiatives using ISO 14001 environmental management, based on the Group's Environmental Policy. Each manufacturing site sets its own targets and specific measures in accordance with local legal regulations and industry initiatives.

Example of environmental protection activity overseas

■ Renesas Semiconductor (Beijing)

Renesas Semiconductor (Beijing) considered the proposal from Beijing BOE Energy Technology Co., Ltd., and started installation of a rooftop solar panel and procurement of renewable energy since October 2013. Generated power covered approximately 3% of the total power consumption of Renesas Semiconductor (Beijing).

Calendar year (from January to December)	Power-generating capacity (MWhr/year)
2014	2,246
2015	2,412
2016	2,484

Renesas Semiconductor (Beijing) conducted a training session in ISO 14001:2015 for the management team and environmental energy/CO_2 emission WG members in July 2016. Implementation of ISO 14001:2015 is scheduled to start from 2017**.

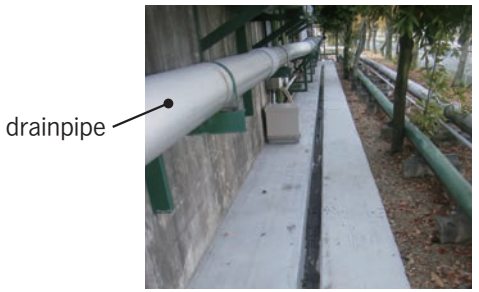
Preventing Soil Pollution

The Group is conducting preventive measures for soil pollution. Major actions taken in 2016** are listed below:

- Implemented preventive measures for penetration of chemical agents dripping from tank lorry
- Conducted penetration of preventive work for wastewater piping
- Conducted preventive work for scattering chemical agent

Example of a measure to reduce the soil pollution risk from chemical agent leakage at the Saijo Factory

The soil under the drainpipe was not covered with concrete but was exposed; in the event of wastewater leakage, there was a possibility of soil contamination. To prevent the contamination risk, we covered the soil with concrete.



Concrete covered ground under the drainpipe

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Eco-Products Initiative

Customers' environmental requirements for our semiconductor products are growing stricter every year. The Renesas Electronics Group is proceeding with its Eco-Products Initiative to meet these requirements. To turn a product into an eco-product, it is important to build in a variety of innovations at the development and design stages to reduce environmental burden at all life cycle stages, including procurement, production, usage and disposal.

Our eco-products are made possible through product environmental assessments, which are comprehensive evaluations of the product environmental burden reduction measures. Product environmental assessments are divided into two stages: At the time of development and prior to mass production.

Eco-Products Initiative at Each Stage

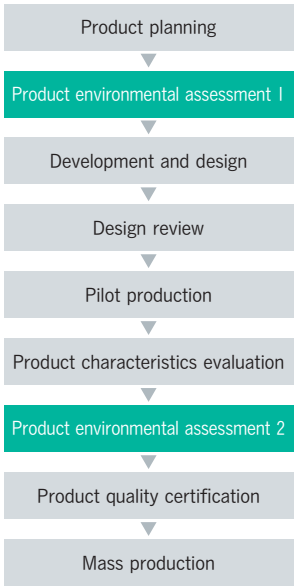
Procurement	Production	Use	Disposal
• Promotion of green procurement by not procuring materials or subsidiary materials that have high environmental burdens	• Energy conservation by shortening production process • Managing chemical substances in production site	• Designing energy saving semiconductor devices (e.g. lower power consumption while in standby status) • Designing semiconductor devices that reduce energy consumption by the system when the device is built into the customer's equipment.	• Eliminating specified chemical substances • Reducing waste through reductions in the size and weight of products

Creation of Eco-Friendly Products

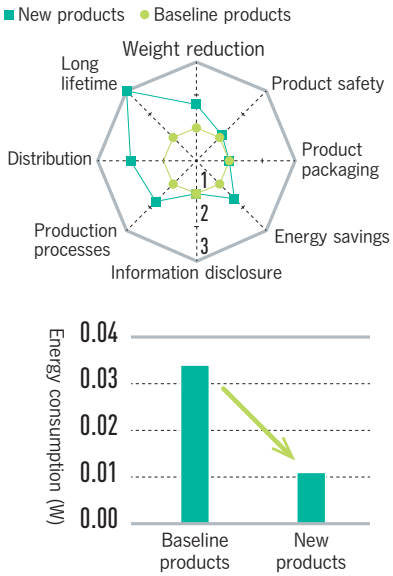
As a way to create eco-friendly products, we include a product environmental assessment, a way of evaluating how much a project mitigates environmental burden, into our development and design flow. The evaluation compares new products against old ones in eight categories, including volume reduction, product safety, and energy savings. The process yields quantifiable results that can be visualized, for example with charts. This helps improve the performance of our semiconductor product itself, and when used in our customers' products, helps make them smaller and more energy-efficient. This ultimately decreases the environmental burden of the customers who use those products.

Information about eco-friendly products (Eco-Products Initiative)
https://www.renesas.com/ja-jp/about/company/csr/ecoproduct.html
(Japanese language only)

Flowchart of Development and Design of General Semiconductor Device



Product Environmental Assessment Results Chart and Energy Consumption Comparison



Renesas Green Device

The Renesas Green Device is internally certified as a product with an assessed environmental performance above the set criterion level. Products with higher environmental performance are selected and certified as Renesas Super Green Devices. The Renesas Green Devices and Renesas Super Green Devices selected from hundreds of newly developed products every year are registered in our database. Some of these products are presented on our website with an environmental performance index.

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Introducing Renesas Super Green Devices for the public

Environment-friendly products (Eco-products activity)
https://www.renesas.com/ja-jp/about/company/csr/ecoproduct.html

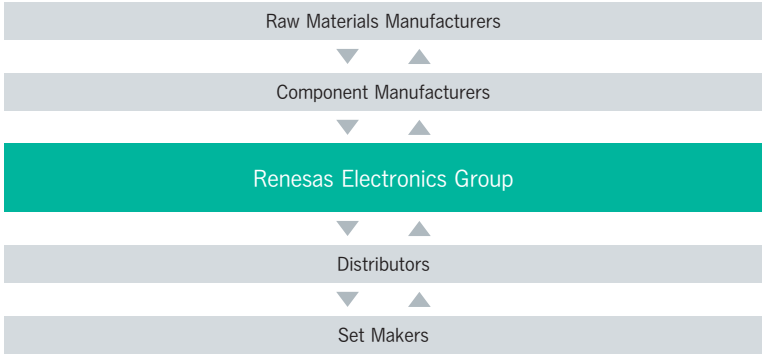
Product name	Type	Application	Environmental performance	Feature
RJU1CF00DWA	Fast recovery diode	General purpose inverter	★★★★	Low switching loss in a large electric current region with fast and soft recovery characteristics
RJH65T14DPQ	IGBT + Fast recovery diode	High power control such as IH	★★★★	Realizing miniaturization by packaging both IGBT and fast recovery diode in one body
RJE0620JPD	High performance power MOSFET (Thermal FET)	Power switching	★★★★★	Realizing both high performance and miniaturization with built-in overheat cutoff circuit
R5F11AG series	General purpose low-end MCU	Bluetooth Low Energy	★★★★	Reduced power consumption for input/output in half, and enabling downsizing of board by eliminating external parts
NP30N04QUK	Power MOSFET for low-middle power	Switching Car mounted ECU control	★★★★	Mounting Dual chip and miniaturizing system configuration 50% in size
R7S721000VLFP	Display control (Camera, Network, Voice) MCU	Display control	★★★★★	Eliminating DRAM on peripheral components Enabling miniaturization of module board size Enlarging internal memory size
RAJ240500A20DNP	Charge and discharge control, Current monitoring function mounted MCU	Monitoring and controlling Lithium ion secondary battery	★★★★	Optimizing battery efficiency by integrating all necessary features in one package, realizing miniaturization for a lightweight device
RBA80N04AHWAUH01	Power MOSFET for low-middle power	Switching Car mounted ECU control	★★★★★	Improved function with built-in temperature sensing diode Reducing power consumption by 20% by low ON resistance

Environmental performance (indicator) ★~★★:Renesas Green Device
★★★~★★★★★:Renesas Super Green Device

Product Environmental Quality

At Renesas Electronics Group, we believe that product chemical substance management in all processes, from material selection during design and development to preventing pollution during the manufacturing process, requires working with the entire supply chain. Thus we have our suppliers certify that their products do not contain prohibited substances and have them provide analysis data. We also conduct supplier audits to confirm their management systems. We additionally ask our sales companies and agents to manage the chemical substances they use in their packing materials. We also provide information on the chemical substances and RoHS Directive*1 and prohibited substance analysis data to our customers so that they can use our products with confidence. Moreover, we allow customers to confirm the Group's management system for chemical substances and the actual activities.

Product Chemical Content Control throughout the Supply Chain



Provide Certificate and Evidence (Analysis Data) of Non-use of Prohibited Chemicals

*1 **RoHS Directive:**EU directive on the Restriction of the use of certain Hazardous Substances in electrical and electronic equipment. Limits content of lead, mercury, cadmium, hexavalent chromium and brominated flame retardants (PBB, PBDE).

Eco-Products Initiative

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Promoting Green Procurement

Renesas Electronics is promoting green procurement. Specifically, the Company prioritizes the procurement of ecofriendly products free of hazardous substances from suppliers who are proactively promoting environmental protection. These guidelines are disclosed to all suppliers and the Company conducts periodic investigations on the environmental measures implemented by suppliers. In addition, the Company advances its procurement initiatives with the understanding and cooperation of our suppliers in relation to testing of purchased items for hazardous substances, compliance with the European Union's RoHS directive and other laws and regulations.

Compliance with Environmental Laws and Regulations

Embedded in a wide range of finished products, Renesas Electronics' semiconductors are being used worldwide. In order to ensure compliance with environmental laws and regulations related to its products and to enable necessary countermeasures for potential issues, Renesas Electronics is working to obtain information regarding such laws and regulations in major countries immediately after its publication.

Major Environmental Laws Overseas and Our Response

The RoHS Directive and the ELV Directive*1 of the European Union have defined threshold values for chemical substances contained in certain products. In response to these and similar directives, Renesas Electronics makes sure that it receives product analysis data from suppliers of semiconductor device components as well as reports certifying that their products are free of banned substances. In addition, we conduct voluntary analysis of these components to confirm that sub-threshold values are observed.

*1 **ELVDirective:**EU directive on End-of-Life Vehicles. Limits content of lead, mercury, cadmium and hexavalent chromium.

European RoHS initiatives
https://www.renesas.com/en-eu/support/products-common/lead/rohs.html

Initiatives in China

China's Administrative Measures for Restrictions on the Use of Hazardous Substances in Electrical and Electronic Products, also known as Amendment China RoHS, requires an indication of the hazardous substance used and the product Environment Friendly Use Period (EFUP) for end products that contain specified toxic and hazardous substances. Semiconductor products are not electrical and electronic end products, so information related to each chemical substance contained in products and product Environment Friendly Use Period (EFUP) values is provided through sales companies and authorized dealers without directly marking the products.

Information about China RoHS
https://www.renesas.com/en-eu/support/products-common/lead/rohs.html#chinarohs

Initiatives in Europe

Renesas Electronics is not required to register its semiconductor devices under the EU's REACH Regulation*2, since they are articles (finished products) that do not intentionally emit chemical substances. However, we obtain information related to substances of very high concern (SVHCs*3) from the supply chain and provide it to customers.

The Group will continue to closely monitor movements of environmental laws and regulations overseas and implement appropriate measures.

*2 **REACH Regulation:**Regulation on Registration, Evaluation, Authorization and Restriction of Chemicals. Requires registration and evaluation to produce or import chemical substances in the EU, requires authorization for substances of very high concern, and sets limits (including bans) on high-risk substances.

*3 **SVHC:**Substances of Very High Concern (because they harm or may harm health and safety.)

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Communication with local communities

On August 9, 2016, Renesas Semiconductor Packaging & Test Solutions Co., Ltd., Yonezawa Factory, donated a wheelchair to the Okitama General Branch Office in Yonezawa City. This program started in 2001. Aluminum cans are voluntarily brought to the factory by employees from each household. Every 500 kg of aluminum cans can be exchanged for an aluminum wheelchair. The factory has been donating these wheelchairs to neighboring cities, towns, and hospitals or welfare facilities in the city. The most recently donated wheelchair was the 10th wheelchair. Also, on October 18, 2016, the factory donated a collected total of 142 kg of plastic bottle caps to Yamagata Bank, Ltd.

Cleaning activities with local communities in 2016** have been voluntarily conducted in various places including the following three locations.

- Shiga Factory : Set up Green Day to carry out cleaning activities around the factory (every month)
- Kochi Factory : Took part in Konan-city's cleaning activity (June, December)
  Cleaning activity around "Friendly," a vocational training center for intellectually handicapped people (July)
- Nishiki Factory : Cleaning activity for local communities (June)

Environmental Education

The Renesas Electronics Group's environmental education system is divided into a general environmental education program and a specialized environmental education program.

In the general environmental education program, the Group provides basic environmental education to help all our Group executives and employees acquire necessary environmental knowledge mainly through online sessions. Meanwhile, the specialized, operation-specific environmental education program has been designed to allow employees to gain the environmental knowledge required for their respective operations. This program offers education and training specific to the individual fields of development, design, sales and manufacturing. Finally, the ISO 14001 and ISO 19011 education programs help employees understand the certification systems and help internal auditors develop their auditing skills.

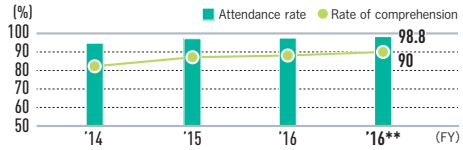
Renesas Electronics Environmental Education System

Program	Purpose	2017** target
General Environmental Education	Raising the environmental awareness of employees	• Basic environmental education (for all Group employees) • Position-specific education (new employees/new leaders/new managers)
Specialized Environmental Education	Gaining environmental knowledge required for operations	• Environmental education for the development, design, and sales divisions • Environmental education for sales strategists • Environmental education for manufacturing divisions
(ISO14001・ISO19011 Education)	• Understanding the ISO 14001 and the ISO 19011 certification system • Developing the skills of internal auditors	• Basic ISO 14001 education • ISO 19011 education • Internal auditor education Environmental education for manufacturing divisions

2016** Achievement

We offered general environmental education covering details including the latest status of environmental problems and environmental laws and regulations to our newly appointed managers and employees in the manufacturing divisions. We also offer an online basic environmental course intended for all Group employees. In many cases, this course forms part of a division's targets, and the attendance rate has been increasing annually since its introduction in fiscal 2012. The results of questionnaire surveys of participants demonstrate the effectiveness of the program, and are reflected in the materials used when the program is next conducted.

Trends in attendance rate for basic environmental training and rate of comprehension



Comments from Environmental Education Participants

- I thought it was necessary to take immediate action against environmental issues that seriously influence our daily life. I would like to make a contribution to environmental protection by promoting familiar ecological activities.
- I once again realized the serious situation of the global warming issue. Even though a single person's ability is limited, it is necessary for the whole company to unite and contribute to environmental protection.
- The contents of the training session were based on our current reality, for example, it includes the Paris Agreement and so on. So it was very helpful. My understanding of the importance of biodiversity has deepened.
- For the children of the next generation, I thought it is necessary to seriously consider the preparation for the future where there is exhaustion of fossil fuels.

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Biodiversity Conservation Activities

Water quality preservation activities have been conducted by the Kochi Factory and Saijo Factory of Renesas Semiconductor Manufacturing Co., Ltd. For example, to check the quality of water, small fish, such as the killifish and goldfish are bred in a drained water pond. At the Kochi Factory, some of these so-called Renesas Medaka are kept in an aquarium in the entrance hall and displayed so that customers and employees can observe the fish.

The aquarium displayed in the entrance hall of the Kochi Factory

Forest Preservation Activities

The Group conducts forest conservation activities in various places. In 2016**, the Kumamoto Kawajiri Factory received a certificate for 36.94 tons of CO_2 offsets.

Award

The Renesas Semiconductor Package & Test Solutions Electronic instruments department was awarded the 2016** Yamagata Prefecture environmental conservation promotion award by the Yamagata-ken Kankyou Hozen Kyougikai. This award will be sent to any business unit or its employees in the prefecture who conduct creative and active environmental conservation actions with the concept of both economically and environmentally beneficial. On June 2, 2017, the awards ceremony was held at the Yamagata Prefecture global warming prevention promotion campaign convention.

http://www.eny.jp/hozenkyo/jigyo/documents/runesasu_000.pdf

Provision of Various Information

Site Reports

The Group issues site reports for its domestic sites and Group companies primarily for the sake of local communities.

- Naka Factory, Renesas Semiconductor Manufacturing Co., Ltd.

https://www.renesas.com/ja-jp/about/company/csr/office/naka.html

- Shiga Factory, Renesas Semiconductor Manufacturing Co., Ltd.

http://www5.city.otsu.shiga.jp/kankyou/content.asp?key=0120110303&skey=0
(Otsu City Environment Division website, Japanese language only)

- Takasaki Site, Renesas Electronics Group (Issued as hard copy)

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Opinion exchange meeting with Fujitsu Limited

We held opinion-exchange meetings with members from Fujitsu Limited who are in the same electric appliance/electronics industry before issuance of the Environmental Report 2017. The purpose of the meeting was to elevate the quality of the report and make it more comprehensive through frank exchanges of opinions.

Valuable suggestions and input from Fujitsu Limited are reflected in our Environmental Report 2017.

- **Discussed about GRI (G4) Guideline conformance**
- **Received feedback about Environmental Management System**
- **Discussed about Energy Consumption Rate based on the Act on the Rational Use of Energy**
- **Based on the development of new environmentally friendly products, some additions were made to Renesas Green Devices**
- **Received feedback about disclosure of an event in regard to the environment**

We deeply appreciate the cooperation of Fujitsu Limited.

The Renesas Electronics Group set out our report to be an impressive yet readable report from the stakeholders' viewpoint.

Member of opinion-exchange meeting

Fujitsu Limited

- Environmental department

Mr. Nobuhide Aoyama, Mr. Mitsuru Otagiri, Mr. Kenji Hanafusa, Ms. Woranara Umpairat

- Industrial business department

Mr. Mitsutaka Nakamura

Renesas Electronics Corporation

- Environmental promotion department

Mr. Hisahiko Abe, Mr. Shinji Nakagawa, Mr. Nobuyuki Yamanishi,
Mr. Hiromichi Waki, Mr. Yasuki Sakata

Date of the meetings

April 17, 2017　Held at Fujitsu Limited, Kawasaki factory
May 22, 2017　Held at Renesas Electronics Corporation Toyosu headquarters

Scene of opinion-exchange meeting