

## Hitachi Appliances Environmental Report 2014



## For a better environment, Hitachi Appliances works hard to contribute to our global environment through ceaseless technological innovation.

Hitachi Appliances was established in April 2006 as a Hitachi Group company in charge of home appliances, air-conditioning systems, and new environmental technologies for consumer use. Its origin dates back to 1918 when Hitachi, Ltd. began producing electric fans and well pumps. We have emphasized the development of our own technology for many years to improve the basic performance and user-friendliness of our products. In recent years, we have mainly focused on measures to address environmental issues involving energy saving, and remain committed to ongoing technical innovation.

When looking around the world today, we can see continuous population growth and improved

standards of living mainly in emerging nations, resulting in increases in global energy consumption. Energy saving technology should now evolve further in order to utilize limited resources and mitigate global warming, an issue of rising concern. As the impact of chemical substances contained in electric and electronic equipment on the environment is drawing more attention, many countries are tightening the regulations governing such chemical substances as well.

Under such circumstances, Hitachi Appliances will continue to provide environmentally friendly products featuring our energy-saving technologies for the world, in an effort to help address energy issues and minimize environmental



impact. At the same time, we will constantly pursue products that satisfy the needs of customers and fulfill their dreams as well, thereby enriching society and bringing greater convenience to life.

We are aiming at a company to contribute to a global environment.

President and Director

Takanori Ninomiya

Message from the President	1
Eco-Products and Their Technologies	3
Reporting on Environmental Activities	8
Hitachi's Environmental Vision	8
Action Guidelines for Environmental Conservation	8
Environmental Management Structure	8
Internal Environmental Auditing	9
Building Environmental Management System	9
Development of Eco-Products	9
Recycling of Home Appliances	10
Management of Chemical Substances Contained in Products	10
Global Warming Prevention	10
Effective Utilization of Resources	11
Management of Chemical Substances	11
Retention / Control of PCB	11
Environmental Communication Activity	12
Corporate Overview	14



# Natural Refrigerant Heat Pump Water Heater (For Japan)

Adopt a newly developed evaporator for the heat pump unit for intrinsic energy-consumption efficiency

## Product feature

[Tap water direct pressure type] is a mechanism that supplies water using tap water pressure, and instantly boils the tap water, ensuring high shower pressure for simultaneous use in the bathroom and kitchen, for example, and provides drinkable water.

## Eco-friendly feature

### Energy-saving

#### High-efficiency heat pump unit

The [Tap water direct pressure type] fully-automated (high-efficiency) standard tank has achieved high energy-consumption efficiency by using a high-efficiency heat pump unit, which adopts a newly developed evaporator, scroll compressor, and water heat exchanger.

\* The adopted technologies vary depending on the models.

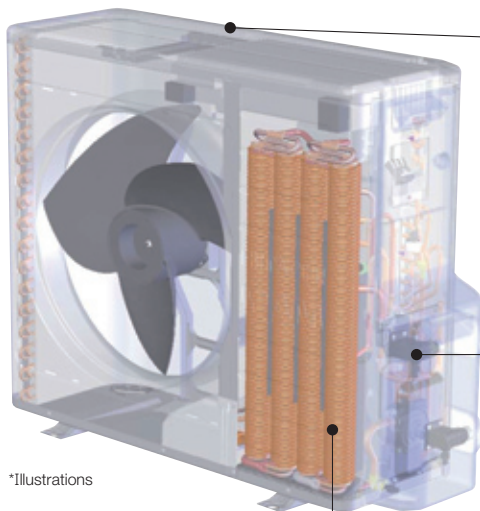


Heat pump unit

Hot-water unit

BHP-FV46ND

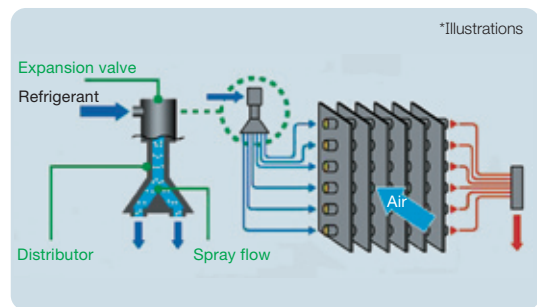
\* The hot-water unit in the photo is equipped with leg covers (option.)



\*Illustrations

#### Evaporator

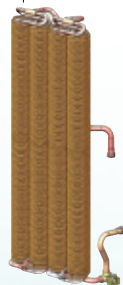
The heat-absorbing performance is enhanced by distributing the refrigerant as a spray via an expansion valve to densely-allocated refrigerant tubes with smaller diameter and multiple branches.



\*Illustrations

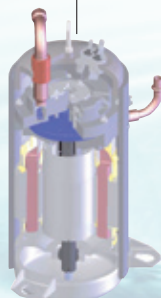
#### Water heat exchanger

The heat-exchanging performance to transfer the refrigerant heat was improved by reducing the diameter of the refrigerant tube and increasing the heat-transfer area.



#### Scroll compressor

Leakage of refrigerant was reduced and compression efficiency improved by minimizing the gap between the orbiting scroll and fixed scroll.



## Resource-saving support function

The function informs the setting according to the amount of water to be used, and the history of water consumption to support resource-saving.

#### Guideline for water to be used

Compares the amount of water used for confirmation.

#### Shower alarm

The three-level alarm supports water-saving management.

#### Recommended setting

The function studies the amount of water used before, and indicates (informs) the recommended setting for boiling water.

\* If switching from "Omakase-setsuyaku" to "Omakase-ome", efficiency may decline, which may hinder resource-saving.

Hitachi Appliances is proactively manufacturing products that reduce the environmental burden by preventing global warming, conserving energy, saving resources, and reducing chemical substances.

## LED lighting (For Japan)

### LED ceiling light and bulbs achieve brightness and energy-saving performance with LED lights.

#### LED ceiling

##### Product feature

Abundant light is diffused by a lens, and spread over the ceiling, walls and throughout the room. [Raku Mie (comfortable vision)] achieves natural light, bright and close to sunlight, where small letters can be read easily, and photos look brighter and more vivid.



LEC-AHS1810CC

##### Eco-friendly feature

#### Energy-saving

- Efficiently radiating heat from the LEDs and optimizing the arrangement of domed LED units equipped with this lens allows both generous light and high energy-saving performance. The model for rooms up to 18 tatami units<sup>\*1</sup> in size achieves brightness of 8,000 lm (lumen). Models for rooms 6 to 14 tatami units in size achieve maximum brightness<sup>\*2</sup> within the brightness standard for the room size, and reduce energy consumption with luminaire efficacy rate 123.1 to 125.8 lm/W (lumen/watt)<sup>\*3</sup>.

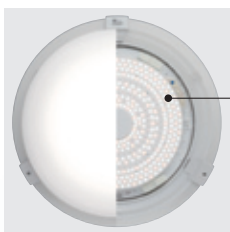
\*1 The criteria for up to 18 tatami units are established by Hitachi.

\*2 Housing Catalog Applicable Tatami Units Labeling Standards (Guide 121: 2011) established by the Japan Lighting Manufacturers Association.

\*3 The luminaire efficacy rate is calculated by dividing the rated luminous flux by the rated power consumption.



Domed LED unit with lens function



Efficiently dissipating heat and optimizing the arrangement of domed LED units for both generous light and high-energy performance.

#### Power-Saving Features

- Simply press the [Eco Korekkiri] button, whereupon the sensor detects the room brightness to retain a preset level in the room. The function for automatically dimming or extinguishing the light and reducing power consumption when the room is sufficiently bright as a result of outside light or another light source.
- The ceiling light features a Power-Saving mode to dim the light and reduce energy consumption to prioritize energy-saving.

#### LED bulbs

##### Product feature

A light-diffusing cover effectively and evenly diffuses the LED light. Moreover, the newly developed body structure with high radiation performance achieves brightness equivalent to a 100W bulb from a module of nearly equivalent size and shape.

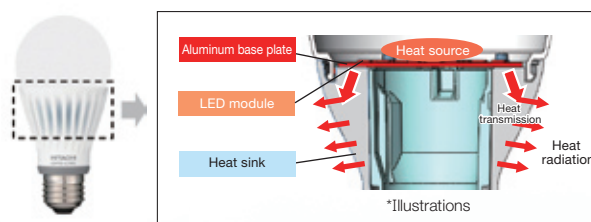


LDA11D-G/100C (Daylight color)

##### Eco-friendly feature

#### Energy-saving

- With a high-efficiency LED module, and a newly developed body structure with high radiation performance that efficiently radiates heat emitted from the aluminum substrate, the LED bulbs achieve size<sup>\*4</sup> resembling an incandescent bulb and high energy-saving performance<sup>\*5</sup> and have achieved the FY2017 energy-efficiency target standard value<sup>\*6</sup>.



Newly developed body structure

\*4 Comparison between LED bulb LDA11D-G/100 C (daylight color) with outer diameter of 60 mm and overall length of 123 mm equivalent to an incandescent 100W bulb and a JIS-compliant Hitachi incandescent 100W bulb with outer diameter of 60 mm and overall length of 144 mm.

\*5 LED bulb LDA11D-G/100 C (daylight color) with total luminous flux of 1,520 lm and luminaire efficacy rate of 133.3 lm/W, which is equivalent to an incandescent 100W bulb.

\*6 The FY2017 energy-saving target value for the luminaire efficacy rate, based on the "Act on the Rational Use of Energy", is 110.0 lm/W.

#### Promotion of long-term use

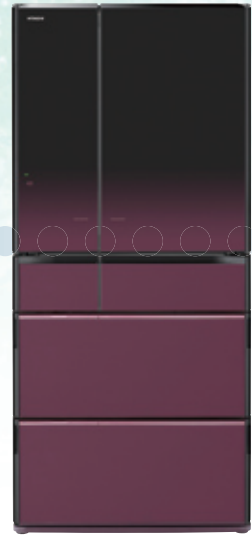
- Since the rated life is 40,000 hours, 40 times that of an incandescent bulb<sup>\*7</sup>, the improved durability helps ensure resources are used effectively, and reduces waste materials.

\*7 Comparison of an LED bulb (LDA11D-G/100C with rated power consumption of 11.4W, and rated life of 40,000 hours) with a JIS-compliant Hitachi incandescent 100W bulb (LW100W90V with rated power consumption of 90W and rated life of 1,000 hours.)



# Refrigerator (For Japan)

## Advanced energy-saving technologies and features that realize both large capacity and energy-saving



R-X6700E (ZV)

### Product feature

In addition to [vacuum preservation] <sup>\*1</sup>, unique Hitachi technology to prevent oxidization in the vacuum compartment, our refrigerator adopts a [photocatalyst preservation] function, where vegetables are preserved in “hibernation” to protect their nutrients, using carbon dioxide emitted from a photo catalyst exposed to LED light in the [photocatalyst preservation space], located at the deep end of the bottom case in the vegetable compartment.

<sup>\*1</sup> Here, vacuum refers to below-atmospheric pressure. The pressure in the vacuum compartment is kept at approximately 0.8 atm, lower than atmospheric pressure, which we call a vacuum.

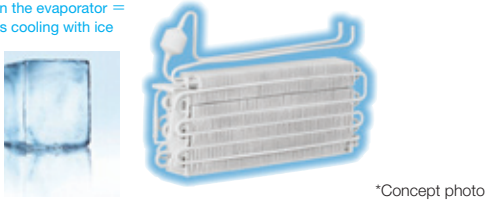
### Eco-friendly feature

#### Energy-saving

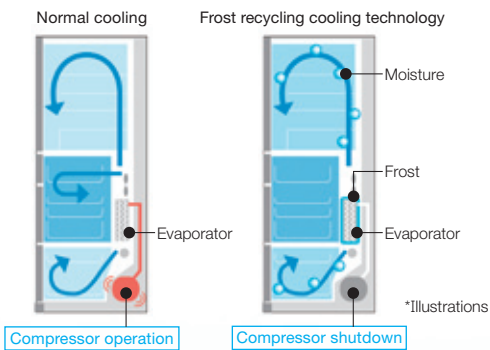
##### ● [Frost Recycling Cooling Technology]

Frost Recycling Cooling is a technology that stops the compressor and uses frost adhering to the evaporator to cool the refrigerator and vegetable compartments. Since frost is consumed, frost removal using the heater is reduced.

Cooling using frost on the evaporator =  
The same principle as cooling with ice



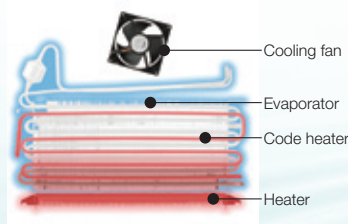
\*Concept photo



\*Illustrations

##### ● [Hybrid Defrosting System]

[Frost Recycling Cooling Technology] uses frost-cooled air to cool the refrigerator and vegetable compartments, and increase the temperature of the frost adhering to the evaporator. Moreover, two heaters also defrost to shorten the defrosting time.



\*Illustrations

##### ● [Dual Fan Cooling System]

A fan is installed on the ceiling of the top shelf of the refrigerator compartment, where warm air may flow in when the door is opened. Alongside the cooling fan, it swiftly cools the refrigerator compartment, and prevents energy loss.



\*Illustrations



Refrigerator compartment ceiling fan

##### ● [Flexible Vacuum Insulation Panel]

Flexible vacuum insulation panels can be molded three-dimensionally to conform to the inside of insulated walls with complex shapes, which maximizes both capacity and energy-saving.



\* The position, shapes and number of panels differ according to the model.

#### Environment Conservation

##### ● HFC-Free Urethane / HFC-Free Refrigerant

A hard urethane insulation material made using HFC-Free insulation foam gas (cyclopentane) is used for areas other than vacuum insulation panels. Also used is an HFC-Free refrigerant (R600a).

Hitachi Appliances is proactively manufacturing products that reduce the environmental burden by preventing global warming, conserving energy, saving resources, and reducing chemical substances.

## Washer/dryer (For Japan)

**[Niagara Beat washing system] abundantly circulating water to wash off even tough dirt stains cleanly**



BW-D10XTV (N)

### Product feature

With a high-flow shower and washing wing with a unique shape that moves clothes efficiently, the [Niagara Beat washing system] sprays highly concentrated detergent on them, and washes off even tough dirt stains.

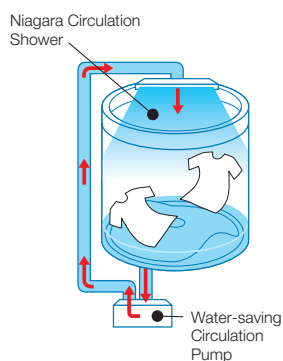
The washer/dryer newly adopts a glass-top design, with a one-piece lid made of easy-clean tempered glass, and an assist mechanism to make the lid easier to open and more convenient to use.

### Eco-friendly feature

#### Water-saving

##### ● [Niagara Circulating Shower]

[Niagara Circulating Shower] widely sprays a high flow, approximately 45L per minute, to ensure the highly concentrated detergent permeates the clothes sufficiently. [Water-saving Circulation Pump] circulates water and thus realizes a high flow while saving water.



\*Illustrations

#### Water and Energy-saving Support Functions

##### ● [Eco water sensor] system

This system measures ① water hardness, ② water temperature, ③ detergent level, ④ laundry characteristics, ⑤ laundry quantity, ⑥ rinse condition, and ⑦ spin condition, and smartly sets the detergent quantity indicator, water volume and washing time to save water and power.

Maximum water and power savings possible by using the [Eco water sensor] system

	Water consumption	Energy consumption
Water temperature 10°C/powder synthetic detergent/cotton clothes	86L	140Wh
Water temperature 25°C/concentrated liquid detergent/ artificial clothes	84L	115Wh

Comparison based on differences in water temperature, detergent level, laundry characteristics, rinse and spin conditions when turning on the [Eco water sensor] system with 10-kg laundry, standard course and water hardness of 50 ppm. Data based on Hitachi measuring criteria.

\* Effect may differ according to conditions.

## Packaged air-conditioning Systems for commercial/office (For Japan)

**Efficient air-conditioning according to the in-room situation**

### Product feature

In addition to the energy-saving function, the indoor unit (4-Way Cassette Type) sensor is enhanced, which allows the air-conditioner settings to be adjusted according to circumstances for greater comfort and more efficient energy-saving.

### Eco-friendly feature

#### Energy-saving

● The high-efficiency DC inverter motor installed in the compressor, and the optimized refrigerating cycle control improved APF<sup>\*1</sup>. Power consumption is reduced thanks to the improved air flow from the outlet of the indoor unit (4-Way Cassette Type) and heat exchange efficiency is increased by newly developed fins.

\*1 The APF (Annual Performance Factor) is an energy-saving index calculated under conditions comparable to the actual environment of use, which represents the cooling/heating capacity per power consumption of 1 kWh when an air-conditioner is used year-round under specific conditions. APF is based on JIS B 8616:2006 "Package Air Conditioners" and JRA4048:2006 "Periodical Energy Consumption Efficiency of Package Air Conditioners."



Indoor unit (4-Way Cassette Type) RCI-AP140K5  
Sensor panel P-AP160NAE1

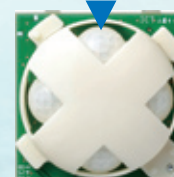
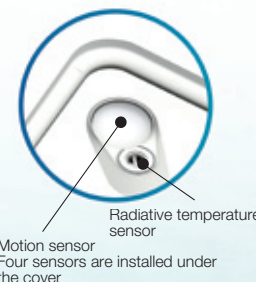


Outdoor unit RAS-AP140GH2

#### Power-Saving Features

##### ● Motion Sensor and Radiative Temperature Sensor

The 4-Way Cassette Type adopts four motion sensors and one radiative temperature sensor as standard features<sup>\*2</sup>. It senses the air-conditioning space divided into four areas to detect the amount of human activity in each area. It also detects the radiative temperature from the floor and tables to control the room temperature according to the room environment for comfort and to save energy.



\*2 Standard feature in combination with the "Packaged Air-Conditioning System for Stores and Offices." Optionally available in combination with "Master of Energy-Saving."



Environmentally-aware products are developed; not only for the Japanese market but also for those outside of Japan.

## Air-to-water Heat Pumps (For Europe)

YUTAKI-S/YUTAKI-S80/YUTAKI-S Combi

Hitachi Air Conditioning Products Europe, S.A.U.

### Product feature

The YUTAKI-S Series is an air-to-water heat pump for room air-conditioners and boilers, comprising an indoor unit installed with a heat exchanger connected to an outdoor unit via a refrigerant pipe. It can replace existing heating systems such as conventional gas/oil boilers and electric heaters, can be installed in new buildings, and can also be connected to a general radiant heater, floor-heating system, hot-water tank, and solar water heater.

### Eco-friendly feature

#### Energy-saving

- The heat-pump system utilizes aerothermal energy with reduced CO<sub>2</sub> emissions compared to gas/oil boilers and e.g. electric heating systems.
- The scroll compressor, inverter control, high-efficiency plate heat exchanger, and water pump make the system more efficient than conventional heating systems.



Indoor unit RWH-4.0FSVNFE



Outdoor unit RAS-4HVRNME-AF

\* The photo of the indoor unit includes a tank unit.

## Room air-conditioner (For Brazil)

ALL DC INVERTER series

Hitachi Air Conditioning Products Brazil Ltd.

### Product feature

All eight models in the series, including the RACIV12B, adopt inverter control systems, for both comfort and energy-saving. The ON/OFF 12-hour timer and re-activating function that automatically turns on the system after power failure are user-friendly.

### Eco-friendly feature

#### Energy-saving

- The inverter control system and other functions improve efficiency and save energy. The product won Class A in ENCE (Etiqueta Nacional de Conservação de Energia: National Energy-Saving Indication) of INMETRO (Instituto Nacional de Metrologia, Qualidade e Tecnologia: National Institute of Metrology, Quality and Technology) in Brazil.



Indoor unit



RACIV 12B outdoor unit

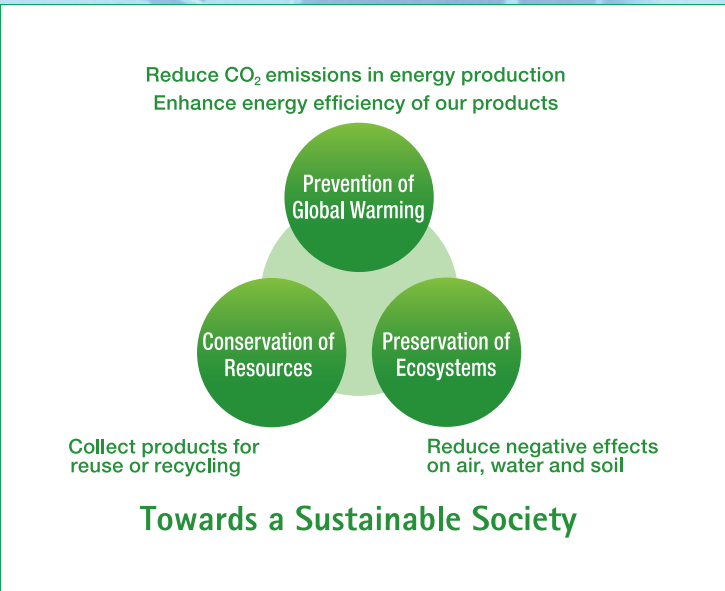


### Hitachi's Environmental Vision

The Hitachi Group has established an environmental vision that the realization of a sustainable society is the purpose of environmental management.

Hitachi sets up the prevention of global warming, the conservation of resources and the preservation of ecosystems as its three important pillars and promotes global product manufacturing for the environmental impact reduction in all life cycles of products to realize a sustainable society.

Hitachi Appliances Group engages in environmental conservation activities to realize the environmental vision, including the development of Eco-Products and environmental impact reduction in production activities.



### Action Guidelines for Environmental Conservation

Hitachi Appliances has established groupwide guidelines that set forth actions for environmental conservation in business activities based on the Hitachi Appliances Group Standards of Corporate Conduct.

**Purpose**

In order to realize an environmentally harmonious and sustainable society through products and services, Hitachi Appliances is committed to meeting its social responsibilities by promoting globally-applicable "MONOZUKURI" (designing, manufacturing or repairing of products), which is aimed at reducing environmental burdens of products throughout their entire life cycles, ensuring global environmental conservation.

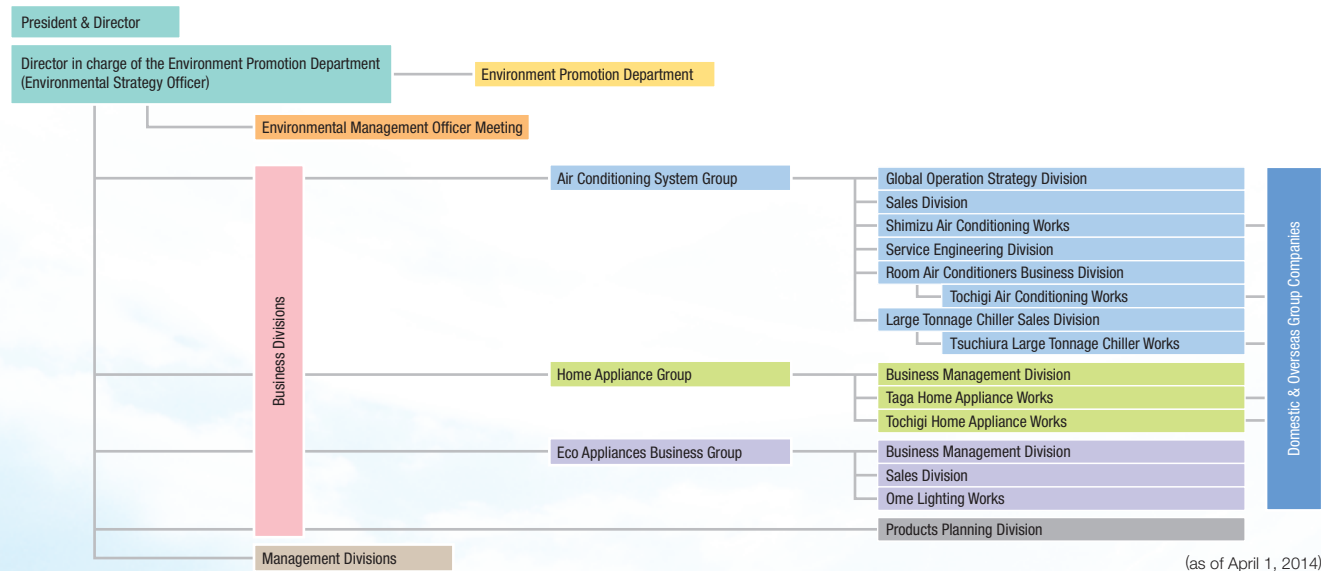
**Action Guidelines**

- ① Global environmental conservation is a critical challenge shared by all humans. Hitachi Appliances is committed, therefore, to fulfilling its responsibilities by assisting in the realization of an environmentally harmonious and sustainable society as one of its management priorities.
- ② Hitachi Appliances will make efforts to contribute to society by developing highly reliable technologies and production processes, while identifying needs considering concerns related to the prevention of global warming, conservation of resources, and preservation of ecosystem.
- ③ Members of the board in charge of environmental conservation are responsible for facilitating appropriate environmental conservation activities. Departments responsible for environmental conservation should endeavor to promote and ensure environmental conservation activities, including improving environment-related rules and regulations and setting goals for environmental burden reduction. These departments should also confirm that their environmental conservation activities are conducted in a proper manner and ensure that these activities are maintained and improved.
- ④ Hitachi Appliances will promote globally-applicable "MONOZUKURI" with the aim of understanding and reducing environmental burdens at every stage, including product research and development, design, production, distribution, sales, usage, and final disposal.
- ⑤ Hitachi Appliances will investigate and review the environmental impact caused in the course of its "MONOZUKURI" processes. Hitachi Appliances will also introduce excellent technologies and materials useful to safeguard the environment, in other words, to reduce environmental burdens through energy and resource saving, recycling, chemical substance management, consideration of ecosystem, and other measures.
- ⑥ Hitachi Appliances' environmental conservation efforts are not only to be focused on observing international environmental regulations and those of national and local governments, but also on conserving the environment by implementing voluntary environmental standards when necessary.
- ⑦ Regarding globally-applicable "MONOZUKURI" activities, impact on the local environment and community are to be considered. In addition, measures that meet local communities' requests should be implemented.
- ⑧ Hitachi Appliances will educate its employees to take action in order to obey environment-related laws, raise their global environmental awareness, and encourage their interest in environmental conservation having wide-view about society activities.
- ⑨ Hitachi Appliances will evaluate potential environmental problems and prevent them from occurring. In the event that any environmental problem occurs, Hitachi Appliances will take appropriate measures to minimize the environmental burden.
- ⑩ Hitachi Appliances will make efforts to disclose information on its environmental conservation activities to its relevant stakeholders. Hitachi Appliances will also actively communicate with these stakeholders so as to strengthen mutual understanding and forge cooperative relationships with them.

(Revised in July 2010)

### Environmental Management Structure

Hitachi Appliances has established the Environmental Management Board Meeting as a forum for deliberations and decisions concerning Group-level policies and targets. This committee consists of the Environmental Strategy Officer, who coordinates environmental policy for the entire Group, and environmental officers representing business sites and key subsidiaries. Environmental protection activities are implemented by the Environmental Promotion Department, in cooperation with Business Divisions and Management Divisions, on the basis of decisions made by the Environmental Management Board Meeting.



## Internal Environmental Auditing

In our aim to raise the level of environment activities across the whole group, we are conducting internal environmental audits at manufacturing sites that could have relatively large environmental impact. The audit teams are put together by the environmental representatives at business sites other than the Environment Promotion Department and sites covered by audits. Their role is to assess compliance with environmental laws and regulations and the implement status of various measures to meet Group targets.

In FY2014, an environmental audit conducted at four domestic business sites, confirmed that there were no major problems.

## Building Environmental Management System

In order to make positive progress on environmental conservation activities, with a focus on Japanese and overseas manufacturing sites, the construction of an environmental management system based on ISO 14001 is proceeding and the Group is moving ahead on obtaining certification by outside organizations.

### ● ISO14001 Certification of Manufacturing Sites

Site	Certification date
Tochigi Works	29 January, 1997
Taga Works	22 July, 1996
Shimizu Works	28 October, 1997
Tsuchiura Works	25 March, 1997
Ome Works	30 September, 1997
Hitachi Taga Technology, Ltd.	22 July, 1996
Hitachi Reftechno, Inc.	29 January, 1997
Hitachi-kucho SE, Ltd.	28 October, 1997
Kantou Eco Recycle Co., Ltd.	1 April, 2002
Hitachi Air-conditioning & Refrigerating Products (Guangzhou) Co., Ltd.	28 June, 2004
Hitachi Compressor Products (Guangzhou) Co., Ltd.	30 April, 2006
Qingdao Hisense Hitachi Air-conditioning Systems Co., Ltd.	19 December, 2005
Shanghai Hitachi Household Appliances Co., Ltd.	23 November, 2000
Hitachi Household Appliances (Wuhu) Co., Ltd.	10 October, 2003
Hitachi Home & Life Solutions (India) Ltd.	14 February, 2006
Hitachi Air Conditioning Products (Malaysia) Sdn. Bhd.	22 April, 1997
Taiwan Hitachi Co., Ltd.	28 August, 1997
Hitachi Consumer Products (Thailand), Ltd.	20 December, 1999
Hitachi Compressor (Thailand), Ltd.	4 November, 1999
Hitachi Air Conditioning Products Europe, S.A.	4 May, 1999

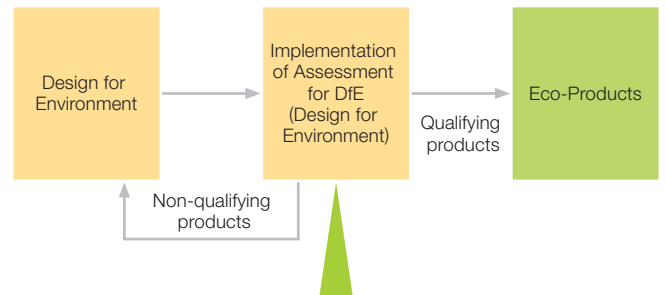
## Development of Eco-Products

To reduce as far as possible environmental burden at every stage of the product life cycle from resource mining to disposal and recycling, Hitachi Appliances conducts assessments at the time of product development and design using the Assessment for DfE (Design for Environment), an assessment system that sets forth specific environmental criteria.

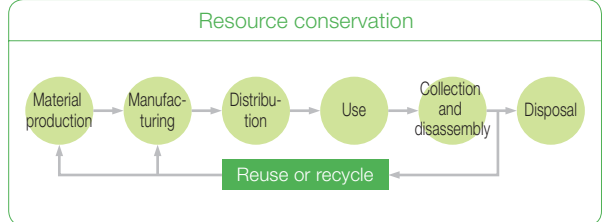
The system compares the models before and after a major specifications change and assesses eight criteria, including mass and volume reduction, long-term usability, recyclability and ease of dismantling and treatment. The models which meet the standards are designated as Eco-Products.

In addition, Eco-Products that meet one of the following four requirements are designated as “Eco-Products Select” : 1) having environmental efficiency of 10 times or more compared to equivalent products sold in FY2005, with environmental efficiency indicating reduction in greenhouse gas emissions and resource consumption and improvement in product value; 2) being an industry leader in terms of environmental performance; 3) being award-winning or publicly certified; and 4) achieving CO<sub>2</sub> emissions reduction of 50% or more compared with equivalent products sold in FY2005. In FY2013, fifty models of seven products including natural refrigerant heat pump water heaters, LED lightings, and refrigerators (all of which received the Grand Prize for Excellence in Energy Efficiency and Conservation) were designated as Eco-Products Select.

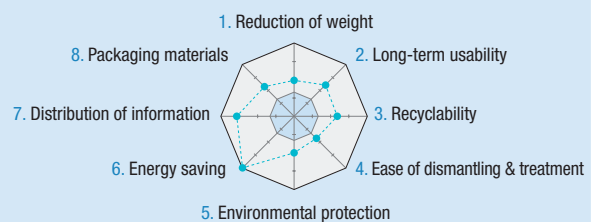
### ● How the Assessment for DfE is Performed



### Product Life Cycle



### Eight Assessment Criteria (example)





## Recycling of Home Appliances

To comply with the Home-Appliance Recycling Law (Law for Recycling of Specified Kinds of Home Appliances), Hitachi Appliances established the Kantou Eco Recycle Co., Ltd. home recycling plant within the Tochigi Works in 1999, where it recycles four types of used appliances. As a recycling plant integrated with a production facility, the Kanto Eco Recycle facilitates product dismantling and sorting and promotes the use of recycled materials. Five companies\*1 in the same industry cooperatively established an efficient recycling system nationwide.

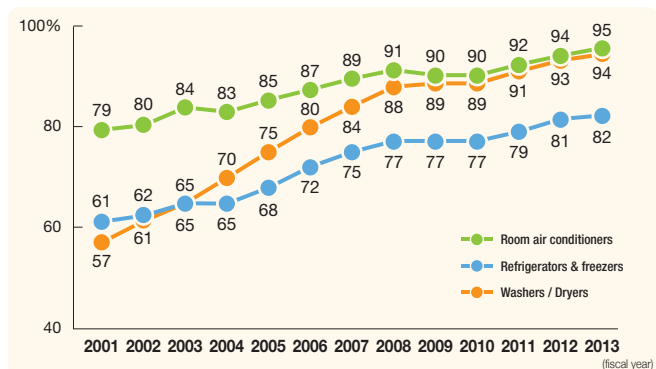
In FY2013, a total of approximately 1,524 thousand units of a total of three products were recycled as products. The recycling rate exceeds the legal standard for all products.

\*1 Hitachi Appliances, Inc., Sharp Corporation, Sony Corporation, Fujitsu General Limited and Mitsubishi Electric Corporation

### FY2013 recycling for three end-of-life home appliance products

Item	Room air conditioners	Refrigerators & freezers	Washers / Dryers	Total
Number of units recycled (thousand units)	296	474	754	<b>1,524</b>
Processing weight of recycled units (tons)	12,165	30,334	26,932	<b>69,431</b>
Weight of recycled material (tons)	11,557	24,916	25,392	<b>61,865</b>
Recycling rate (%)	95	82	94	—
Legal recycling rate (%)	70	60	65	—

### Trends in the recycling rate of three end-of-life home appliances



## Management of Chemical Substances Contained in Products

As seen in the EU Biocidal Product Regulation (enacted in September 2013) and the Regulation on Biodegradable Plastics (to be enacted in 2014) in the United Arab Emirates (UAE), as well as the revised RoHS Directive (enacted in January 2013) and REACH (enacted in June 2007) in the European Union (EU), environmental regulations on chemical substances contained in products are intensifying worldwide.

In future, RoHS by Belarus-Kazakhstan-Russia Customs Union, the regulation on the classification/labeling of harmful chemical substances by Malaysia, and Revised China RoHS are to be enacted, which emphasize the increasing importance of managing chemical substances contained in products.

The Environmental CSR-Compliant Monozukuri Standards were established in 2005 to manage chemical substance contained in products in every stage, from product development and design and procurement to manufacturing. For the Hitachi Group's Voluntarily Controlled Chemical substances (17 prohibited substances, 20 controlled

substances), we survey the presence and volume of chemical substance content related to components included in our products, based on the Hitachi Group Green Procurement Guideline, including all production-related materials purchased which could be included in our products. The information obtained in this survey is then tracked uniformly and shared by all departments.

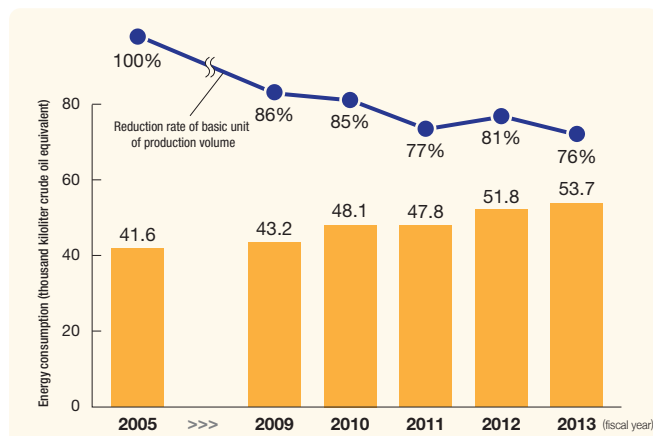
## Global Warming Prevention

To reduce CO<sub>2</sub> emissions, the cause of global warming, and help prevent global warming, Hitachi Appliances has continuously striven to save energy in its production activities.

The increased production volume due to the last-minute demand surge before the consumption tax hike caused FY2013 electric power usage to rise by approximately 2000 kL over FY2012 to 53,700 kL. Thanks to the facility renovation by switching to an LED lighting system, amorphous transformers and other high-efficiency equipment, the rate of reduction in production per unit improved from FY2012 by approximately five points compared to the FY 2005 level to 76%.

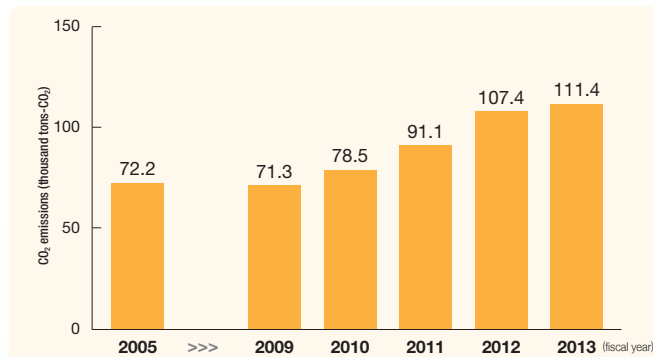
Conversely, CO<sub>2</sub> emissions increased by approximately 4000 tons over FY2012 to 111,400 tons.

### Trends in energy consumptions and the rate of reduction in production per unit in Japan



Data gathered: Tochigi Works, Taga Works<sup>2</sup>, Shimizu Works, Ome Works and Hitachi Reftechno, Inc. \*2 Includes affiliate companies working with the above companies. Energy consumption is calculated based on the "Act on the Rational Use of Energy."

### Trends in CO<sub>2</sub> emissions in Japan



Data gathered: Tochigi Works, Taga Works<sup>3</sup>, Shimizu Works, Ome Works and Hitachi Reftechno, Inc. \*3 Includes affiliate companies working with the above companies. CO<sub>2</sub> emissions were calculated based on the CO<sub>2</sub> emissions coefficient specified in the "Greenhouse Gas Emissions Calculation, Report, Publication System" of the Act on Promotion of Global Warming Countermeasures.

The CO<sub>2</sub> emissions coefficient in electricity was calculated using the CO<sub>2</sub> emission intensity, the Federation of Electric Power Companies of Japan index for FY2005 and actual emission coefficients for electric power companies as published by the Ministry of the Environment for FY2009 and subsequent years. (for FY2013, the FY2012 actual figure was used.)

### Effective Utilization of Resources

To utilize finite resources, Hitachi Appliances is working to reduce the amount of waste and valuable materials, such as resources with market value, generated in production.

In FY2013, a move to bring parts production in-house and increase overseas parts procurement resulted in more waste and valuable materials generated at Japanese factories, amounting to approximately 40,300 tons.

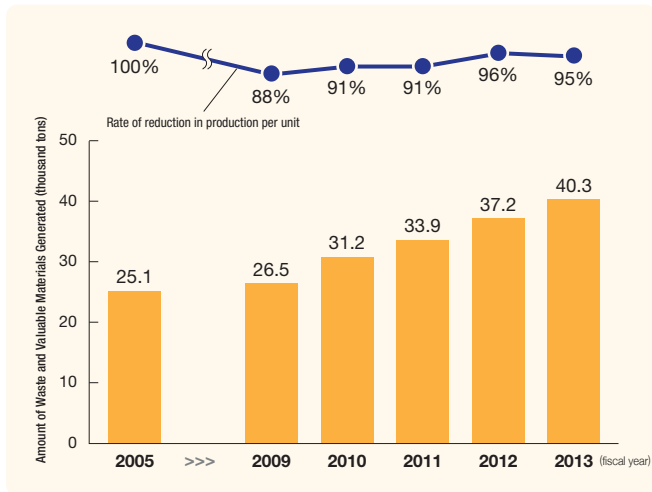
Conversely, the amount of waste finally disposed of was reduced by 0.2 tons from FY2012 to approximately 6.8 tons. Continuing its success from the previous year, the company achieved the zero-emission<sup>\*1</sup> goal at its five factories in Japan.

\*1 Zero emissions: This approach aims to reduce final disposals at landfills to zero by using waste as raw materials for other industries.

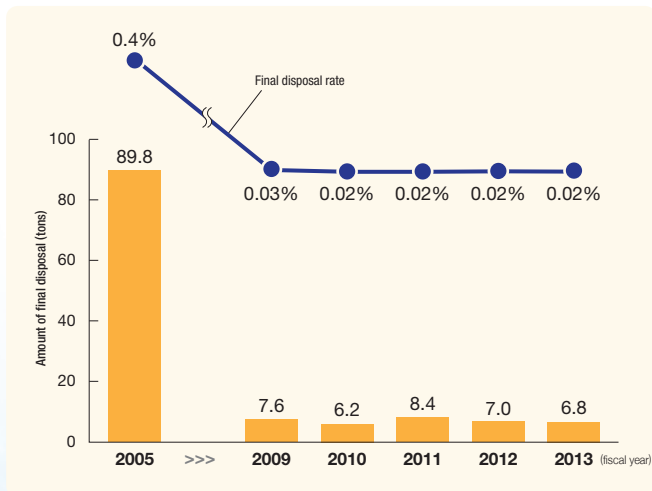
The Hitachi definition of this approach states that landfill disposal ratio<sup>\*2</sup> in a given year must not exceed 0.5%, and that evaluate for each works.

\*2 Final disposal rate: The amount of disposal in landfill / waste and valuable materials generated.

#### Trends in waste and valuable materials generated and the rate of reduction in production per unit in Japan



#### Trends in final disposal and the final disposal rate in Japan



Data gathered: Tochigi Works, Taga Works<sup>3</sup>, Shimizu Works, Ome Works and Hitachi Reftechno, Inc.  
\*3 Includes affiliate companies working with the above companies.

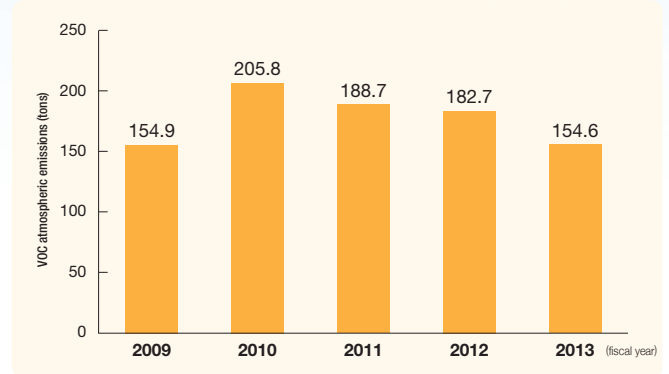
### Management of Chemical Substances

Hitachi Appliances is working to reduce atmospheric emissions of 41 volatile organic compounds (VOCs)<sup>\*4</sup> independently determined by the Hitachi Group.

In FY2013, VOC emissions decreased by approximately 28 tons from FY2012 to approximately 154.6 tons.

\*4 VOC: Volatile organic compounds such as toluene, xylene and ethanol.

#### Trends in VOC atmospheric emissions in Japan



Data gathered: Tochigi Works, Taga Works<sup>5</sup>, Shimizu Works, Ome Works and Hitachi Reftechno, Inc.  
\*5 Includes affiliate companies working with the above companies.

### Storage and Management of PCB<sup>\*6</sup>

Transformers, capacitors and fluorescent ballasts containing PCBs are properly retained, managed and notified based on the Waste Management and Public Cleansing Act (Waste Management Law) and the Law Concerning Special Measures for Promotion of Proper Treatment of PCB Waste (Law Concerning Special Measures Against PCB Waste.)

Disposal of highly concentrated PCB waste is registered at the Japan Environmental Safety Corporation that engages in such disposal, and is implemented according to the plan. Low-concentration PCB waste is disposed of in order of acceptance by disposal contractors.

\*6 PCB: polychlorinated biphenyls. Characterized by their insulation properties and non-combustibility, PCBs have been used for wide-ranging purposes, such as transformers and other electrical appliances. In 1968, the emergence of Kanemi Yusho disease revealed their toxicity as a social problem. Production of PCBs has been banned since 1972.



Removal of PCB waste



## Environmental Communication Activity

To create a sustainable society together with our customers, the local community, suppliers, employees and all other stakeholders, Hitachi Appliances strives to disclose information and engage in dialog in various forms.

Three products were awarded the "Grand Prize for Excellence in Energy Efficiency and Conservation" at the 2013 award ceremony.

### Hitachi Appliances, Inc.

At the 2013 Grand Prize for Excellence in Energy Efficiency and Conservation, hosted by the Energy Conservation Center, Japan (ECCJ), Hitachi Appliances took grand prizes. In the home-use natural refrigerant heat pump water heaters, 55 models, including the BHP-FV46ND, received the Director-General's Prize, The Agency for Natural Resources and Energy in the Product Category & Business Model Category. Also, in the LED lighting category, a total of 37 models – i.e. 22 including the home-use LED product "LED ceiling light" LEC-AHS1410B and 15 including the LDA17L-G "LED bulb" - took the "Chairman's Prize, The Energy Conservation Center, Japan." The series of large-capacity refrigerators (11 models, including the R-G6700D) received the "Reviewer's Prize."



BHP-FV46ND  
Home-use natural refrigerant heat pump water heater



LED ceiling LEC-AHS1410B



LED bulb LDA17L-G  
LED lighting



R-G6700D  
Large-capacity refrigerator

Environmental education catered to a local elementary school

### Hitachi Appliances, Inc. Tochigi Works

Hitachi Appliances Tochigi Works promoted an environmental education program continuously, and provided environmental education catered to a local elementary school regarding home-appliance recycling and water circulation in November 2013.

Through images and experiments, children learned how used appliances are treated and recycled, and how water used in plants is treated and released in rivers as clean water.

We have children understand the importance of separating waste and recycling to foster their environmental awareness.



Planting Trees to Protect the Earth

### Taiwan Hitachi Co., Ltd.

Taiwan Hitachi Co., Ltd. is working to preserve the Earth's environment through its company philosophy of "Treasure the community and cultivate Taiwan."

This included the tree-planting program in Bianzhou park in Taoyuan city in March 2014. These activities are now in their fourth year since starting in 2011.

On the event day, under the slogan of "Plant a tree, protect the land", 1,028 volunteers, including employees, their families, and cooperating manufacturers, planted 1,600 trees that symbolize our hope.

We teach children the importance of the environment by planting trees and watching them grow.



Greenery Life, Creating Green through Planting Trees

### Hitachi Air-Conditioning Systems & Refrigerating Products (Guangzhou) Co., Ltd. Hitachi Compressor Products (Guangzhou) Co., Ltd.

Hitachi Air-Conditioning Systems & Refrigerating Products (Guangzhou) Co., Ltd. and Hitachi Compressor Products (Guangzhou) Co., Ltd. sponsored tree-planting activity for Lin Chuan and Sanjiashui Townships outside the city of Conghua to raise awareness of protecting the environment and take appropriate action.

The activity was held in April 2014, under the theme, "Greenery Life, Creating Green through Planting Trees", a total of approximately 100 volunteers that include employees, their family members, and local elementary school children planted 50 Podocarpus trees. The mountain climbing and picnic which formed part of the activity also fostered parent-child relationships.

We will further strive to protect the natural environment in cooperation with local people.



## Environmental Communication Activity

### Ecology activity in Spain

#### Hitachi Air Conditioning Products Europe, S.A.U.

Hitachi Air Conditioning Products Europe, S.A.U. organizes various eco-activities for our employees, their families and local residents to raise environmental awareness.

Our major activities include a cleaning campaign around our plant, a plant tour for local students and recycling boxes installed in the plant to collect old clothes and pet bottle caps and support this activity. These activities are conducted year-round.

We also expand the scope of our environmental activities, such as participating in a photo contest, aiming to prevent labor risks, promote health, and raise environment awareness.

We will continuously engage in environmental communication activities.



### Exhibition at FEBRAVA 2013

#### Hitachi Air Conditioning Products Brazil, Ltd.

Hitachi Air Conditioning Products Brazil, Ltd. participated in the International "FEBRAVA 2013" Exhibition held at the Immigrate Exhibition Center in Sao Paulo, Brazil to exhibit our air-conditioning systems (coolers, heaters, ventilators, and air-conditioner) in September 2013.

The Hitachi booth displayed a wide range of products, both commercial and domestic, including commercial air-conditioning systems such as the new indoor unit "4-Way Cassette Type", high-efficiency multi-air-conditioner units for buildings, and "Set Free", as well as domestic room air-conditioners, which the Manaus Plant has newly started manufacturing.

In this exhibition, the air-conditioning units introduced included models for which the use of HCFC refrigerant (R-22) has been voluntarily stopped in the Brazilian air-conditioning industry and promoting the use of inverters with high energy-saving capacity.



### Exhibition at the Appliance World Expo

#### Shanghai Hitachi Household Appliances Co., Ltd.

Shanghai Hitachi Household Appliances Co., Ltd. participated in the Appliance World Expo 2014 held by the Chinese Home Appliances Association at the Shanghai New International EXPO Center in Shanghai in March 2014 to exhibit its products.

Hitachi exhibited eco-friendly Japanese products such as refrigerators, drum washer/dryers, cyclone cleaners, air-purification systems, superheated steam-oven ranges, and IH rice cookers.

The refrigerator R-C6800C received the "Low Carbon Emission Award" at the 2014 China Appliance Awards.



### Exhibition at the Energy Conservation Fair

#### Hitachi Appliances, Inc.

In November 2013, the 8th Energy Conservation Fair, the largest-scale exhibition of its kind in the Kansai Area, featuring the latest products and services, was held at Osaka City MyDome Osaka by the Kansai Bureau of Economy, Trade and Industry, at which Hitachi Appliances exhibited its products.

The Hitachi booth exhibited the indoor unit "4-Way Cassette Type", which is installed with a Motion Sensor, commercial air-conditioning systems such as air-conditioning control systems, and LED lights for high ceiling and straight LED light bulbs under the theme, "Introduction of air-conditioning systems and new LED lighting products that save energy and power." Many people visited our booth.





Company name	Hitachi Appliances, Inc.
Main business	Development, manufacture and sales of home appliances and comprehensive air conditioning systems
President & Director	Takanori Ninomiya
Capital Stock	20 billion yen (Hitachi, Ltd. 100%)

Established	April 1, 2006 (Registered Establishment Date : November 26, 1998)
Consolidated revenues	655.7 billion yen (for the fiscal year ended March 31, 2014)
Consolidated number of employees	18,800 (as of the end of March, 2014)
Website	<a href="http://www.hitachi-ap.com/">http://www.hitachi-ap.com/</a>

### Atago Office (Head Office), Takeshiba Office (Registered Office)

Atago Office (Head Office)	Hitachi Atago Bldg., 15-12, Nishi Shimbashi 2-chome, Minato-ku, Tokyo 105-8410, Japan	Takeshiba Office (Registered Office)	New Pier Takeshiba South Tower., 16-1, Kaigan 1-chome, Minato-ku, Tokyo, Japan
----------------------------	---	--------------------------------------	--

### Group Companies outside Japan

#### ● ASIA

Qingdao Hisense Hitachi Air-conditioning Systems Co., Ltd. ■ Manufacturing & Sales [Packaged air conditioners]	TEL:+86-532-8087-5901 Hisense Information Industry Park 218, Qianwangang Road, Qingdao Economic Development Zone, 266510, China	Shanghai Hitachi Electrical Appliances Co., Ltd. ■ Manufacturing & Sales [Rotary compressors]	TEL:+86-21-5055-4560 1051, Yunqiao Road, Pudong Jinqiao Shanghai, 201206, China
Shanghai Hitachi Household Appliances Co., Ltd. ■ Manufacturing & Sales [Washing machines]	TEL:+86-21-5178-2188 29F, Tower B, City Center of Shanghai, No.100 Zunyi Road, Shanghai 200051, China	Hitachi Air-conditioning Systems (Shanghai) Co., Ltd. ■ Sales [Chillers, Absorption & centrifugal chillers and Packaged air conditioners]	TEL:+86-21-6431-0007 Room 308 Tower B Guang Qi Culture Plaza No.2899 Xietu Road Shanghai, China
Hitachi Air Conditioning Technology (Suzhou) Co., Ltd. ■ Manufacturing & Sales [Small chillers and others]	TEL:+86-512-6283-3131 14.D.E., Suchun Industrial Square, #428 Xinglong Street Suzhou Industrial Park, Jiangsu, China	Hitachi Household Appliances (Wuhu) Co., Ltd. ■ Manufacturing & Sales [Room air conditioners]	TEL:+86-553-5846669 No.2 Qiliushan Road Wuhu City, Anhui Province 241009, China
Hitachi Air-conditioning & Refrigerating Products (Guangzhou) Co., Ltd. ■ Manufacturing & Sales [Chillers, Absorption & centrifugal chillers and Packaged air conditioners]	TEL:+86-20-8786-2728 No.1108 Cheng Ao East Road, Conghua City, Guangzhou 510935, China	Hitachi Compressor Products (Guangzhou) Co., Ltd. ■ Manufacturing & Sales [Scroll compressors]	TEL:+86-20-8786-1868 No.1086 Cheng Ao East Road, Conghua City, Guangzhou 510935, China
Hitachi Air-conditioning Systems (Hong Kong) Co., Ltd. ■ Sales [Chillers, Packaged air conditioners and others]	TEL:+852-3620-2138 Rm.702-3, 7/F., Wharf T & T Centre, Harbour City, Canton Road, Tsimshatsui, Kowloon, Hong Kong	Taiwan Hitachi Co., Ltd. ■ Manufacturing & Sales [Room air conditioners, Packaged air conditioners, Chillers and others]	TEL:+886-2-2508-3311 63, Nanking East Road, Sec. 3 Taipei, Taiwan
Hitachi Air Conditioning Products (Phils), Inc. ■ Manufacturing & Sales [Packaged air conditioners and Room air conditioners]	TEL:+63-47-252-1533 No.1A, Binictican Drive Subic Bay Industrial Park phase II, Subic Bay Freeport Zone, Philippines	Hitachi Industrial Machinery Philippines Corp. ■ Manufacturing [Absorption & centrifugal chillers]	TEL:+63-46-402-1112 PEZA Drive, Phase II Special Export Processing Zone First Cavite Industrial Estate Dasmariñas, Cavite, Philippines
Hitachi Compressor (Thailand), Ltd. ■ Manufacturing & Sales [Compressors]	TEL:+66-35-330819 ~ 32 1/65 Moo 5, Rojana Industrial Park, Tambol Kanham Amphur U-Thai, Ayutthaya 13210, Thailand	Hitachi Consumer Products (Thailand), Ltd. ■ Manufacturing & Sales [Washing machines, Refrigerators and others]	TEL:+66-3728-4000 610/1 Moo 9 Tambol Nongki Amphur Kabinburi, Prachinburi 25110, Thailand
Hitachi Tochigi Electronics (Thailand) Co., Ltd. ■ Manufacturing & Sales [Electronic control boards]	TEL:+66-0-3895-4372 ~ 5 Eastern Seaboard Industrial Estate, 64/39 Moo 4 T.Pluakdaeng, A.Pluakdaeng, Rayong 21140, Thailand	Hitachi Air Conditioning Products (Malaysia) Sdn. Bhd. ■ Manufacturing & Sales [Room air conditioners and Rotary compressors]	TEL:+60-3-8925-6611 Lot 10, Jalan Kemajuan, Bangi Industrial Estate, 43650 Bandar Baru Bangi, Selangor Darul Ehsan, Malaysia
Hitachi Home & Life Solutions (India) Ltd. ■ Manufacturing & Sales [Room air conditioners, Packaged air conditioners, Chillers and others]	TEL:+91-2764-277571 Hitachi Complex, Karan Nagar, Kadi, Dist. Mehsana-382727 Gujarat, India		

#### ● Europe

Hitachi Air Conditioning Europe SAS ■ Sales [Packaged air conditioners, Room air conditioners, Chillers, Hot-water heaters and others]	TEL:+33-1-34-63-05-00 18, Rue Grange Dame Rose 78140 Velizy, France	Hitachi Air Conditioning Products Europe, S.A.U. ■ Manufacturing [Packaged air conditioners and Chillers]	TEL:+34-93-828-0808 Ronda Shimizu 1 Poligono Industrial Can Torrella 08233 Vacarisses, Barcelona, Spain
---	--	--	--

#### ● South America

Hitachi Air Conditioning Products Brazil, Ltd. ■ Manufacturing & Sales [Packaged air conditioners, Room air conditioners, Chillers and others]	TEL:+55-11-3549-2722 Av. Paulista 854-7 Andar, Bela Vista, CEP. 01310-913, São Paulo-S.P., Brazil
---	--

### Factories in Japan

Tochigi Works	Tochigi City, Tochigi Prefecture	Taga Works	Hitachi City, Ibaraki Prefecture
Shimizu Works	Shizuoka City, Shizuoka Prefecture	Tsuchiura Works	Tsuchiura City, Ibaraki Prefecture
Ome Works	Ome City, Tokyo		

### Sales Divisions, Branches, and Marketing Offices in Japan (Air Conditioning System Group)

Hokkaido Marketing Branch	Kitanihon Branch Office
Fukushima Marketing Branch	Kanto Branch Office
Hokuriku Branch Office	Chubu Branch Office
Kansai Branch Office	Chushikoku Branch Office
Shikoku Marketing Branch	Kyushu Branch Office

### Sales Divisions, Branches, and Marketing Offices in Japan (Eco Appliances Business Group)

Kitanihon Marketing Branch	Kanto Marketing Branch
Chubu Marketing Branch	Kansai Marketing Branch
Chushikoku Marketing Branch	Kyushu Marketing Branch

### Group Companies in Japan

Hitachi Taga Technology, Ltd.	Hitachi Reftechno, Inc.
Hitachi-Kucho SE, Ltd.	Hitachi Air Conditioning Kanto Co., Ltd.
Niigata Hitachi Co., Ltd.	Hitachi Air Conditioning Kansai Co., Ltd.
Kyushu Hitachi Air Conditioning Co., Ltd.	Kanagawa Hitachi Air Conditioning Co., Ltd.
Shizuoka Hitachi Reinetsu Co., Ltd.	Kantou Eco Recycle Co., Ltd.
Hitachi Softec Co., Ltd.	



## Scope of Report

- Reporting Period: FY2013 (1 April, 2013 to 31 March, 2014)
- Scope of Reporting: Hitachi Appliances, Inc. and its consolidated subsidiaries  
Where the scope is different from the above, describe it is so indicated.
- Referenced Guidelines: “Environmental Reporting Guidelines (FY2012 Version)” (Ministry of the Environment, Japan), “Environmental Performance Indicators Guideline for Organizations (FY2002 Version)” (Ministry of the Environment, Japan), “Environmental Reporting Guidelines 2001—With Focus on Stakeholders” (Ministry of Economy, Trade and Industry, Japan)
- Next Issue: Around August 2015
- Website: (Japanese version only) <http://www.hitachi-ap.co.jp/company/environment/kankyo/>

---

### Contact Address

#### **Hitachi Appliances, Inc., Environment Promotion Department**

Hitachi Atago Bldg., 15-12 Nishi Shimbashi 2-chome, Minato-ku, Tokyo 105-8410 Japan  
TEL: +81-3-3502-2111 FAX: +81-3-3506-1442

---

Issued in September 2014