

Hitachi Appliances Environmental Report 2015



Hitachi Appliances keeps striving to help create a better environment through technological innovation.



Hitachi Appliances operates businesses in the areas of home appliances, air-conditioning systems, and new environmental technologies for consumer use, with our vision of “contributing to society through the development of superior, original technology and products.”

To this end, we are working every day to achieve technological innovation using our strengths such as technical skills, manufacturing capabilities, and the ability to develop a wide range of products.

The 21st century is said to be the century of environmental protection, where the issues of climate change and conservation of resources have become important themes.

In particular, solving the issue of climate change purportedly requires building a new, fair, and effective international framework in which all major countries participate, aiming to reduce greenhouse gas emissions.

The Japanese government submitted Japan’s Intended Nationally Determined Contribution ahead of the 21st Conference of the Parties to the United Nations Framework Convention on Climate Change (COP 21) to be held in December 2015, declaring that Japan will reduce its greenhouse gas emissions by 26.0% by 2030 from the level in 2013 (25.4% from the level in 2005; approx. 1,042 million tons of CO₂).

Achieving this goal requires higher energy savings and more efficient products in the industrial, business and household sectors.

We consider our mission to be the continuous supply of such products to society, and are making every effort to accomplish this mission.

In the 2nd half of 2015, we will transfer our air conditioner business, excluding the sales and service divisions in Japan, to a company jointly established with U.S.-based Johnson Controls, Inc. Through this joint

company, we will develop a structure that will facilitate a more globalized supply of our high-efficiency air-conditioning systems.

Moreover, in our businesses of home appliances and new environmental technologies, we will continue to develop environmentally friendly products using our energy-saving technologies and products that meet customer demands, hoping to help develop a sustainable society and more comfortable, fulfilling lives of people.

Through such corporate activities, we are striving to become a company that contributes to protecting the global environment.

Takanori Ninomiya
President and Director

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Room Air Conditioner X Series

(For Japan)



RAS-X40E2
Clear White (W)

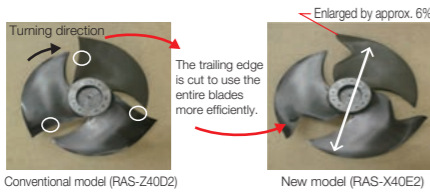
Detects the path of air current to maintain comfort and save power*1

[Kurashi Camera 3D] captures the room three-dimensionally and detects [Air current path]. The air conditioner efficiently circulates cool air to keep the room cool in summer, and directs warm air at people's feet in winter by flexibly controlling the air current.

Energy-Saving Technologies

New blade propeller fan

Enlarging the diameter of the propeller fan used in the outdoor unit by 6%² and cutting the central part of the trailing edge (where air current is concentrated) into a V shape have achieved higher fan efficiency.



* Illustrations
Conventional model (RAS-Z40D2) New model (RAS-X40E2)

High-efficiency SJ-MOS compressor inverter

The on-resistance of the element used in the high-efficiency SJ-MOS compressor inverter has been decreased and the switching characteristics improved, in order to reduce loss.

Large-caliber waveform circulating fan

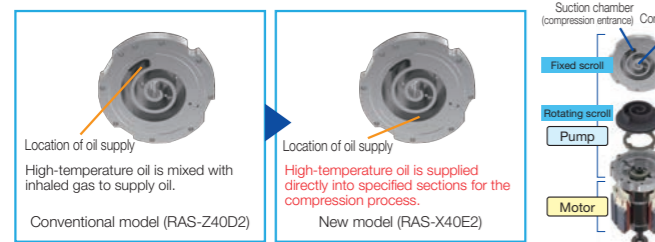
The use of a larger fan caliber reduces circulating fan power, while a newly optimized blade pitch of our original waveform fan increases efficiency.



* Illustrations

Scroll compressor

The heating loss caused by the mixture of high-temperature oil into low-temperature inhaled gas in the conventional model has been reduced by directly supplying heated oil into specified sections for the compression process.

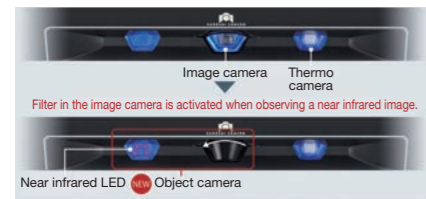


* Illustrations
Conventional model (RAS-Z40D2) New model (RAS-X40E2)

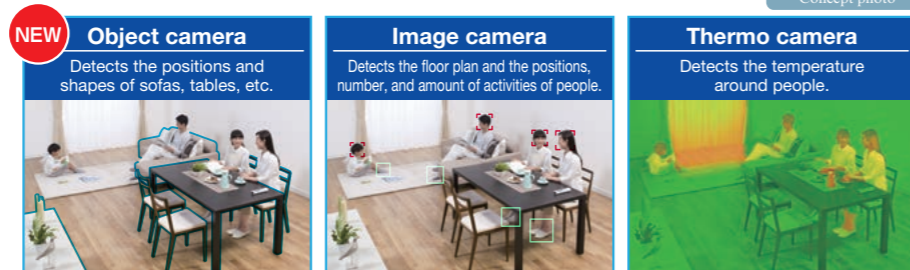
Distinctive Hitachi Technologies

[Kurashi Camera 3D]

The image camera and thermo camera detect the location, number, and amount of activities of people, and the temperature around them. The object camera that combines the image camera and near infrared LED detects the position and shape of furniture, and in [Air current path].



* Concept photo



* Concept photo



Air blows downward. It is blocked by the sofa and does not reach and warm up the dining area.

Warm air reaches the dining area to make it warm.

*1 The power saving effect was measured using RAS-X40E2 in Hitachi's environmental test room (21.43 sq. meters). The sofa and dining table were located 1.9 and 4.7 meters, respectively, from the indoor unit. Measurement was taken near the dining area. The conditions of use included outside temperature of 2°C and room temperature set at 23°C with [Air current path] on, and 26.5°C with [Air current path] off, in order to make the temperature around people's feet in the dining area 23°C, the same temperature as when [Air current path] on. The power saving effect is both rapid and powerful. Under these conditions, the integral power consumption per hour at stable room temperature was 597 Wh with [Air current path] on and 790 Wh with [Air current path] off. The power saving effect varies depending on the settings under which the air conditioner is used.

*2 A comparison between the new model (RAS-X40E2) and the conventional model (RAS-Z40D2).

Natural Refrigerant Heat Pump Water Heater (For Japan)

Hot water tank [Uretank] with a urethane foam filling insulation structure achieves high energy saving performance*1

In addition to the heat pump unit that efficiently makes hot water, the hot water storage unit [Uretank] that adopts a urethane foam filling insulation structure achieves high energy saving performance.

Energy-Saving Technologies

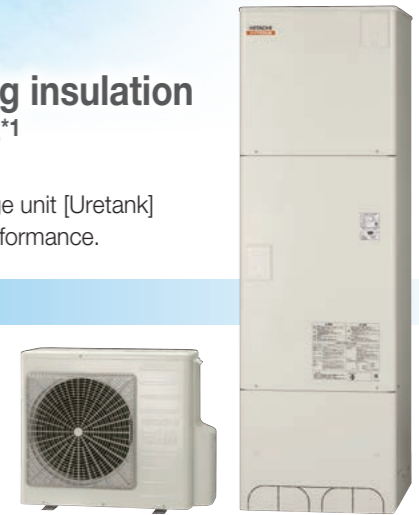
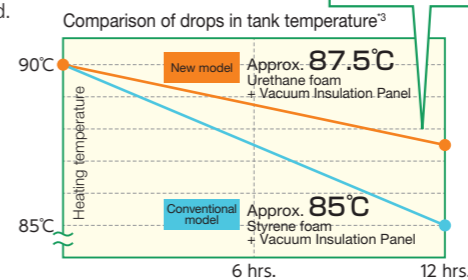
[Uretank]

Urethane foam with higher insulation than the conventional polystyrene lagging is applied on all surfaces and spaces of the tank. The hot water tank with Vacuum Insulation Panel and a high-efficiency heat pump help save even more energy.

Urethane foam and Vacuum Insulation Panel are used to enhance heat retention.

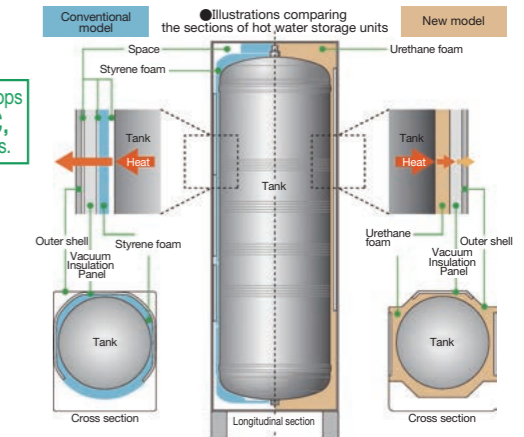
The combination of urethane foam and Vacuum Insulation Panel has achieved insulation about double that of our conventional model.²

The temperature of the tank water heated to 90°C only drops 2.5°C, or about half the drop in temperature with the conventional model (BHP-FV46ND), after 12 hours have elapsed.



BHP-FV46PD

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



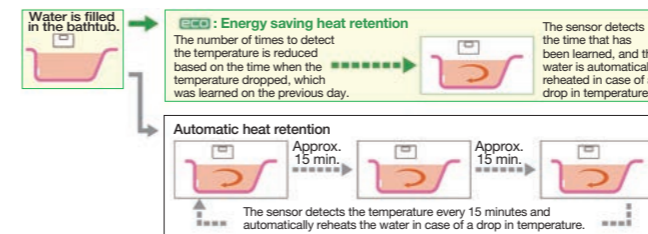
Distinctive Hitachi Technologies

Intelligent control

Efficient control is achieved through sensor-based detection, learning function, etc.

Energy saving heat retention

The sensor detects the temperature of water in the bathtub and learns the time when the temperature drops, etc. By reducing the number of detection times, up to about 35% of the power can be saved⁴ while keeping the bath water warm in comparison to automatic heat retention.



* Illustrations

*1 The efficiency of yearly hot water supply and heat retention (JIS) using Model BHP-FV46PD was 3.8, and that using Model BHP-FV37PD was 3.9. The efficiency of yearly hot water supply and heat retention (JIS) is a value calculated based on JIS C 9220:2011. The value varies depending on the region, operation mode settings, conditions of use, etc.

*2 A comparison with the conventional model BHP-FV46ND based on heat resistance.

*3 Test conditions: comparison of tank water temperatures after leaving the tank water heated to 90°C for 12 hours in a 7°C environment (tested by Hitachi).

*4 The results were obtained in our laboratory. The bathtub was covered. The outside temperature was 7°C. The tank water temperature was 75°C. The amount of water in the bathtub was 180 liters. The temperature setting was 42°C. The nominal diameter of bath pipe was 13A. Cross-linked polyethylene pipe was 10 meters long. Insulation was 10-mm thick. A high insulation bathtub (heat retention: temperature drop of approx. 1°C per 2 hrs.) was used. The comparison is made when the temperature was maintained for 120 minutes after filling the bath water. After the system learned the capacity of water temperature retention, energy saving temperature retention was 1,600 kJ; automatic heat retention was 2,460 kJ. The energy saving effect varies depending on the bathtub's insulation capacity, bathroom environment, etc.

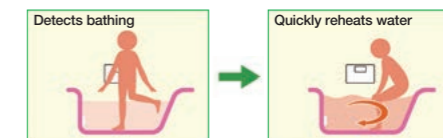
*5 The system may refill water even during the day when a large amount of water is used.

Bathing detection and reheating

The system detects people's bathing based on an increased water level and quickly reheats the water in case of a drop in temperature.

Saving additional water

The system saves power by learning the water use during the previous seven days and avoids refilling, which is activated by a function to prevent water shortages, and late at night as much as possible.⁵



* Illustrations of bathing detection and reheating

LED Lighting (For Japan)

Hitachi's LED lighting that has achieved high energy saving performance

LED Ceiling

Energy conservation with high light intensity

Optimizing the arrangement of domed LED units equipped with our original lens and efficiently radiating heat from the LEDs achieve both high light intensity and energy saving performance. The brightness is at the respective highest levels for rooms 6 to 14 tatami units in size¹ (10,000 lm (lumen)), the highest in the industry², and for 20 tatami units or larger.² All models achieved high energy saving performance of 137 lm/W (lumen/watt) or higher for rooms 6 to 20 tatami units in size or larger.²

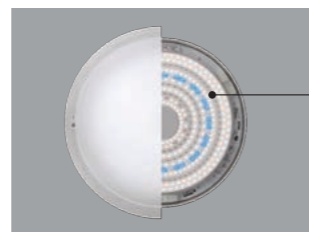
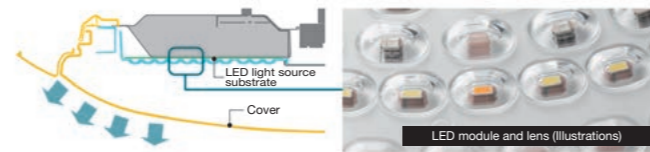


Model equipped with wide illumination "Hirobiro Hikari" LEC-AHS1410EH

¹ Housing Catalog Applicable Tatami Units Labeling Standards (Guide 121: 2011) established by the Japan Lighting Manufacturers Association.
² The criteria for 20 tatami units and above are established by Hitachi.
³ As of September 10, 2015

Domed LED units

The domed lens covering the LED module efficiently disseminates light coming out from LED. The lens expands the maximum brightness appropriate for the room size,¹ which illuminates across the room including the walls and ceiling.



Optimizing the arrangement of domed LED units and efficiently radiating heat from the LEDs achieve both high light intensity and energy saving performance.

* Illustrations

LED Bulbs

The energy saving target for 2017 has already been achieved.

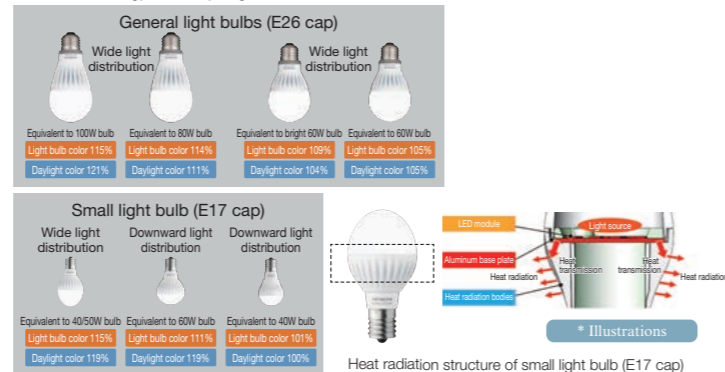
The use of high efficiency LED module and a new structure with high heat-radiation performance has allowed high energy saving performance at a level close to incandescent light bulbs.

The FY2017 energy-efficiency target standard value

| Category No. | Category | Standards Energy Consumption Efficiency (lm/W) |
|--------------|----------------------------------|--|
| 1 | Daylight color, day white, white | 110.0 |
| 2 | Warm white, light bulb color | 98.6 |

Application: general light bulbs (E26 cap), small light bulbs (E17 cap)
Non-application: general light bulbs (E26 cap) with adjustable light, ball-shaped light bulbs (E26 cap) Small light bulbs (E17 cap) with adjustable light, halogen light bulbs (E11 cap)

The FY2017 energy-efficiency target standard value achievement rate



Facility LED Lamps

Achieves high energy saving performance and weight reduction

Our original, highly efficient fin shapes were developed based on heat radiation analysis and achieve high efficiency. The brightness was made equivalent to that of existing mercury lamp devices, and the weight was reduced to facilitate easier installation.

This has achieved efficiency of 134.3 lm/W and a mass of 1.5 kg for the Metal Halide Lamp 400 class.

| | Rated Luminous Flux (lm) | Inherent Energy Consumption Efficiency (lm/W) | Mass of Lamp Section (kg) |
|--|--------------------------|---|---------------------------|
| Metal Halide Lamp 400 Class LME2101MN+BK19CLN14A | 21,500 | 134.3 | 1.5 |
| Mercury Lamp 400 Class LME1601MN+BK14CLN14A | 16,800 | 138.8 | 1.5 |
| Mercury Lamp 250 Class LME1101MN+BK10CLN14A | 11,600 | 139.0 | 1.1 |



LED lamps for high ceilings E39 base type Lamp: LME2101MN

High-efficiency heat radiation fin

Washer/dryer (For Japan)

Plenty of water and strong centrifugal force are used to completely wash off even the detergent.

The new course [Niagara Susugi] focuses on thorough rinsing to wash off any residual dirt and detergent left in the fibers.

A new function [[Onsui] Niagara Beat-senjo] warms up the detergent water and activates enzymes to removes stains.



BW-D11XWV Champagne (N)

Environment Friendly

Reducing product weight

The components inside the wash tub were slimmed to increase washing capacity by 1 kg, to 11 kg, without changing the body size; the product weight was reduced by 1 kg, to approx. 65 kg.

Distinctive Hitachi Technologies

[Niagara Susugi]

Such technologies as the large flow shower that circulates plenty of water and high-speed rotation that creates strong centrifugal force help to thoroughly wash off any residual dirt and detergent left in the fibers.

New way of rinsing that uses Hitachi's original technologies

| Step 1 | Step 2 | Step 3 |
|---|--|---|
| Running clean water. | Squeezing out detergent using centrifugal force High speed: approx. 1,000 spins/min. | Circulating plenty of water Max. flow: approx. 50 liters/min. |
| Runs tap water through clothing while rotating the tub and spreading the detergent. | Spins the tub at high speed using strong centrifugal force to squeeze out the detergent together with water. | Moves clothing in the water while spraying a large flow circulation shower, and washes off any residual detergent left inside fibers. |
| | | |
| * Illustrations | | |

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

Our product Energy Saving Master Premium has continuously pursued energy conservation and comfort.

In addition to industry leading energy conservation,¹ the use of such functions as sensors and individual operation achieves efficient and comfortable air-conditioning. The increased energy saving effect of the products also contributes to reducing power consumption and CO₂ emissions.

¹ When using the models 40 - 280 (excluding models 80 and 160 of the 4-Way Cassette Type) in the combination of indoor units (4-Way Cassette Type and 2-Way Cassette Type), which are the packaged air-conditioning systems for commercial/office use. For the models 224 and 280 (when used as simultaneous twins in a standard combination) as of September 3, 2015

Energy-Saving Technologies

The high-efficiency DC inverter motor installed in the compressor and the optimized refrigerating cycle control helped improve the Annual Performance Factor (APF).

The power consumption of indoor units (4-Way Cassette Type) has been reduced by reducing loss in the ventilation path and increasing the heat exchange efficiency of the heat transfer pipes and fins.



Indoor unit (4-Way Cassette Type)



Outdoor unit

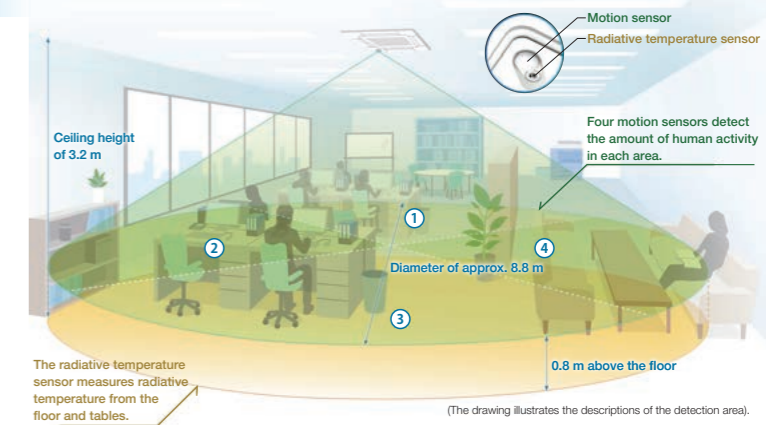
Power-Saving Features

Motion sensors and radiative temperature sensor

Products of the 4-Way Cassette Type are each equipped with four motion sensors and one radiative temperature sensor as standard features. These sensors sense the air-conditioning space divided into four areas to detect the amount of human activity in each area. They also detect the radiative temperature from the floor and tables in the entire area to control room temperature according to the room environment.

Individual operation

Energy Saving Master Premium is capable of connecting multiple indoor units to a single outdoor unit and separately controlling each indoor unit. This enables appropriate air conditioner settings for varying conditions and the environment of use.



(The drawing illustrates the descriptions of the detection area.)

We are also developing environmentally friendly products at our overseas locations.

Side-by-side Refrigerator (For Thailand)

This side-by-side refrigerator features a convenient layout with the freezer and refrigerator/vegetable compartments placed side by side so that each compartment is vertically long, making the upper and lower compartments more visible, and thus allowing frequently used products to be placed at a convenient height and less frequently used products and stock food to be placed on an upper or lower shelf.

It is equipped with an ice-and-water dispenser that uses a water supply tank. Crushed ice, cube ice, and cold water can be dispensed with one push without having to open the doors.

Energy-Saving Technologies

- The refrigerator is efficiently cooled down internally by using an inverter-controlled compressor and a dual-fan cooling system that employs dedicated fans to send cool air separately to the freezer and the refrigerator.
- LED lights used in the freezer, refrigerator, and vegetable compartment save power and last longer than incandescent lamps.

Environmental Protection

This is a HFC-free refrigerator that uses cyclopentane as a foaming agent and R600a (isobutane) as a refrigerant, which causes very little global warming effect.



R-M600GP2TH (Black)

Hitachi Consumer Products (Thailand), Ltd.

Window air conditioner (For India)

This air conditioner is equipped with Auto Climate Technology, which automatically selects comfortable settings from data on the temperatures and humidity of more than 100 Indian cities. Simply pressing the remote control button activates comfortable air-conditioning.

Because a power outage occurs frequently in India where a power supply is unstable, the air conditioner settings are saved in the backup memory, and the settings are restored when power returns after a power outage.

The product received five stars in the 1.5 ton class of the Standard & Labeling Program.

Energy-Saving Technologies

- The product is equipped with an Extra Heat Exchanger that cools down the air by using condensation water. It enables efficient operation even under a very high outside temperature.
- The indoor fans and outdoor fans are powered by two independent motors. Slowing down the indoor fans to reduce airflow does not affect rotation of the outdoor fans, thereby reducing any decline in efficiency of the entire air-conditioning system.



SummerTM RAT518HUD

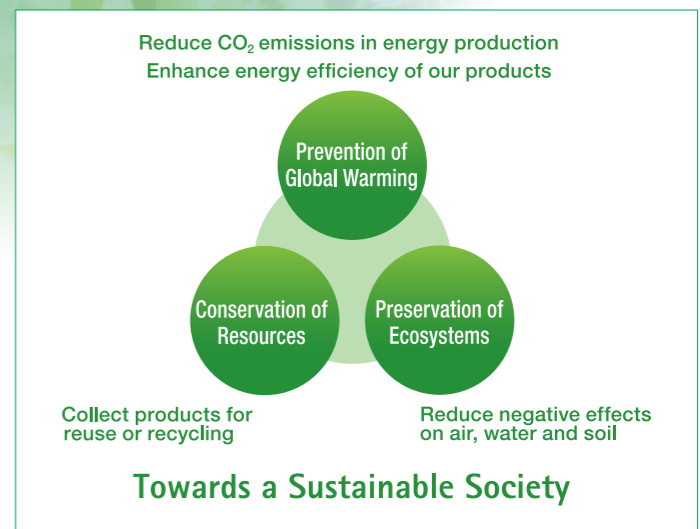
Hitachi Home & Life Solutions (India) Ltd.

Hitachi's Environmental Vision

The Hitachi Group has established an environmental vision whereby its environmental management targets the future goal of building a sustainable society, in order to reduce environmental impact through business activities.

We have established three important pillars in our environmental management that include "prevention of global warming," "conservation of resources," "preservation of ecosystems," and promote global product manufacturing, while reducing environmental impact in all product life cycles to achieve a sustainable society.

Hitachi Appliances is working to protect the environment in its manufacturing activities to realize the environmental vision above, including the development of environmentally-friendly products to save energy and reduce hazardous substances, and the conservation of energy and reduction of waste material in its production activities.



Action Guidelines for Environmental Conservation

Hitachi Appliances has established the Hitachi Appliances Action Guidelines for Environmental Conservation to be shared across the Group, prescribing the 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

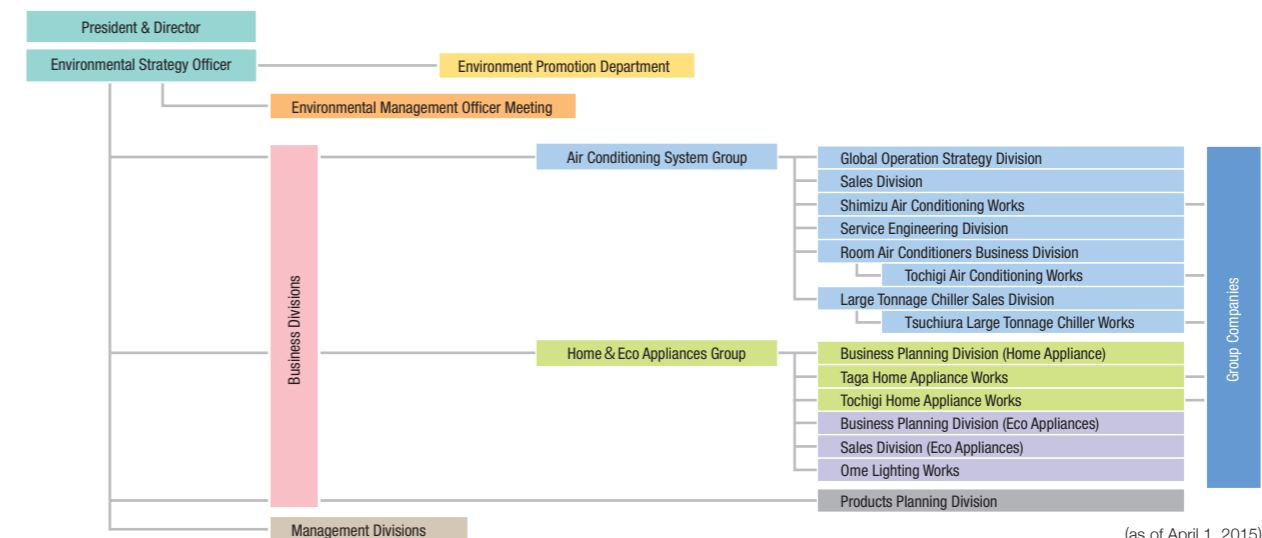
- ① Global environmental conservation is a critical challenge shared by all humans. Hitachi Appliances is committed, therefore, to fulfilling its responsibilities by assisting in the realization of an environmentally harmonious and sustainable society as one of its management priorities.
- ② Hitachi 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 Group-level policies and targets that are discussed and determined by the Environmental Management Board consisting of the Environmental Strategy Officer, who coordinates environmental policy for the entire Group, and environmental officers representing Japanese offices and their key subsidiaries.

The Environmental Promotion Department implements environmental protection activities in cooperation with business and management divisions based on decisions made by the Environmental Management Board. It also conducts environmental internal audits to raise the level of environmental activities carried out in the entire Group.



(as of April 1, 2015)

Building an Environmental Management System

We are building an environmental management system based on ISO 14001, particularly at manufacturing sites with large environmental impact, and working to obtain certification by outside organizations to facilitate our environmental protection activities.

Number of Manufacturing Sites Granted ISO 14001 Certification

| | In Japan | Outside Japan |
|---------------------------------------|----------|---------------|
| Number of sites granted certification | 8 | 11 |

Development of Eco-Products

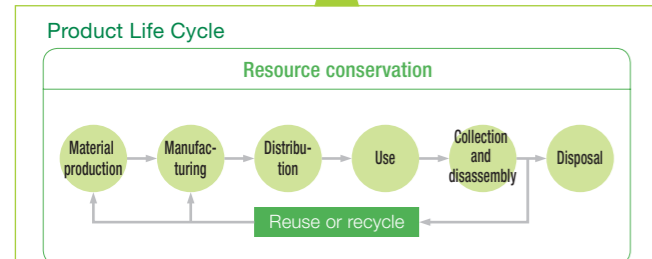
We conduct the Assessment for DfE (Design for Environment) at product development and design to minimize the environmental impact at every stage of the product life cycle from resource mining to disposal and recycling.

The Assessment for DfE evaluates product models based on eight criteria, including mass and volume reduction, long-term usability, recyclability, and ease of dismantling and treatment, on a scale of Level 1 to Level 5. Those models, of which all assessment results are Level 2, equivalent to the model before a major change in specifications, or above and the average assessment score of the eight criteria is Level 3 or above, are designated as Eco-Products and commercially developed.

In addition, Eco-Products that meet particularly high standards are designated as "Eco-Products Select," which are promoted for increased production and sales.

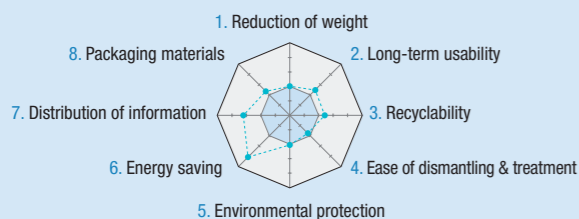
The ratio of Eco-Product sales to total sales in FY2014 reached 96%. A hundred models including room air-conditioners and LED lighting were designated as Eco-Products Select, and then added to those designated since FY2011 for a total of 203 models.

How the Assessment for DfE is performed

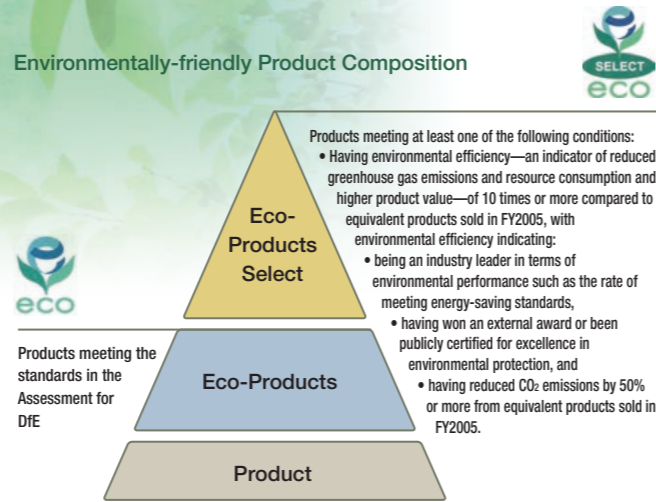


Environmental burden at every stage of product life cycle is quantitatively assessed based on the eight criteria.

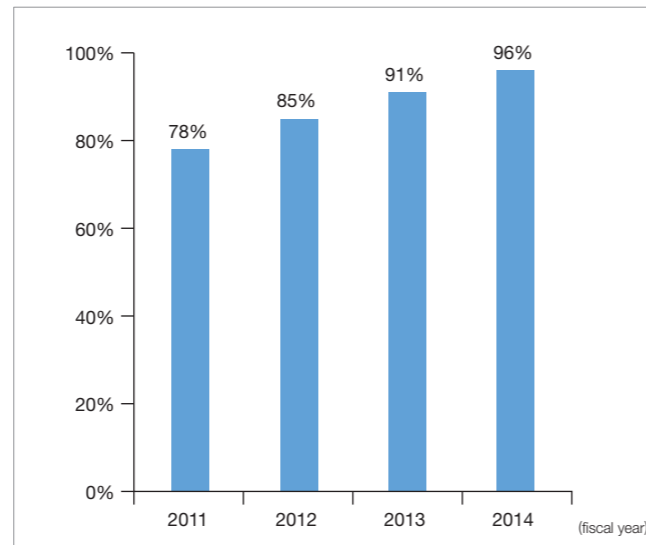
Eight Assessment Criteria (example)



Environmentally-friendly Product Composition

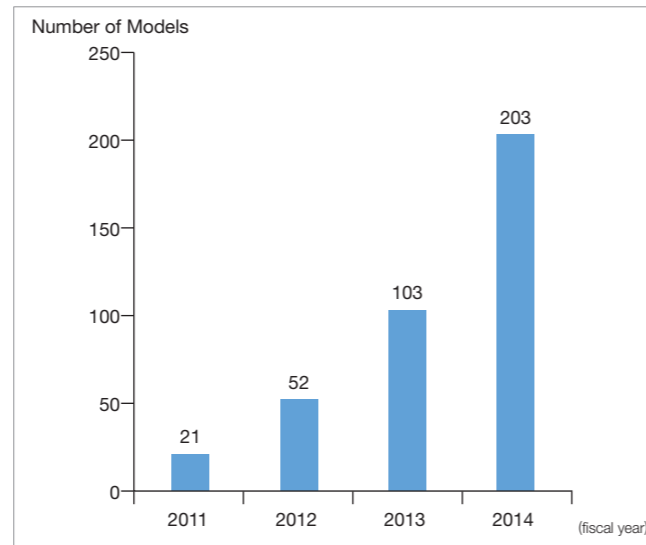


Ratio of Eco-Product Sales to Total Sales*1



*1: The percentage of Eco-Product sales to total sales that excludes products whose environmental factors (e.g., patent fees) cannot be controlled or affected by Hitachi Appliances

Number of Eco-Products Select Models*2



*2: The total number of models since 2011

Recycling of Home Appliances

To comply with the Home-Appliance Recycling Law (Law for Recycling Specified Kinds of Home Appliances), in 1999 Hitachi Appliances established Kantou Eco Recycle Co., Ltd. within its Tochigi Works, which has been recycling used home appliances. As a recycling plant integrated with a production facility, Kanto Eco Recycle works with the production plant to facilitate product dismantling and sorting, increase the ease of dismantling, promote the use of recycled materials, etc. Five companies*1 in the same industry cooperatively established and currently operate an efficient recycling system nationwide.

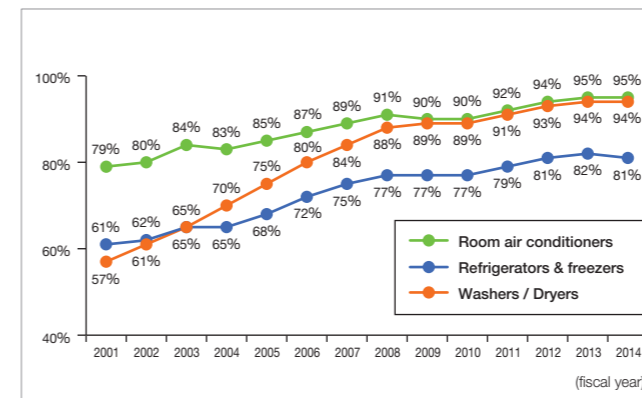
In FY2014, a total of approximately 1,421,000 units of three combined products were recycled as products. The recycling rates of all products exceeded the legal standards.

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

FY2014 recycling for three end-of-life home appliance products

| Item | Room air conditioners | Refrigerators & freezers | Washers / Dryers | Total |
|--|-----------------------|--------------------------|------------------|--------|
| Number of units recycled (thousand units) | 253 | 421 | 747 | 1,421 |
| Processing weight of recycled units (tons) | 10,374 | 26,485 | 27,001 | 63,860 |
| Weight of recycled material (tons) | 9,875 | 21,527 | 25,384 | 56,786 |
| Recycling rate (%) | 95 | 81 | 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

The move to tighten the regulations on chemical substances led by the European Union (EU) is gradually spreading to the rest of the world including Asia. An official gazette was published on June 4, 2015, announcing four substances to be added to the prohibited substances and making the total ten under the RoHS Directive (enforced in January 2013) of the EU, which will be enforced in July 2019 (categories 1 to 7, 10, and 11). Under REACH (enforced in June 2007), two substances were also added to the 13th SVHC (Substances of Very High Concern) on June 15, 2015 to make the total 163, thereby emphasizing the increasing importance of managing chemical substances contained in products.

In response, we have established the Environmental CSR-compliant Monozukuri Standards for managing chemical substances contained in products at every stage from product development, design, and

procurement to manufacturing.

Based on the Hitachi Group Green Procurement Guidelines, we survey the presence and volume of the Hitachi Group's voluntarily controlled chemical substances specified by the Standards, which may be contained in the components of our products.

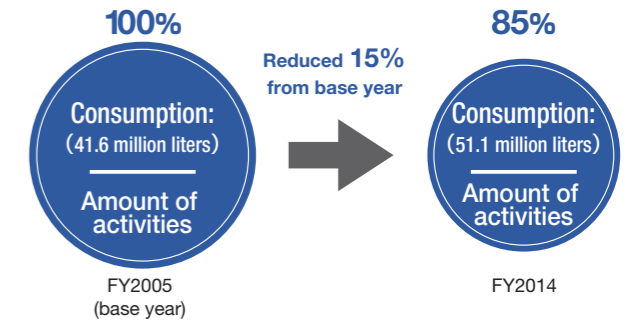
Global Warming Prevention

Hitachi Appliances has continuously striven to save energy in its production activities to help prevent global warming. Since FY2013, we have been working to reduce our energy consumption per unit*1 in line with the Hitachi Group's activities, for which we have set the goal of reducing said consumption by 21% in FY2015 from that in FY2005.

The energy consumption per unit was reduced by 15% in FY2014 from that in FY2005. The activities for improvement include the installation of such high-efficiency equipment as LED lighting and the elimination of wasted energy in the production process by visualizing the electric power used for the production facilities.

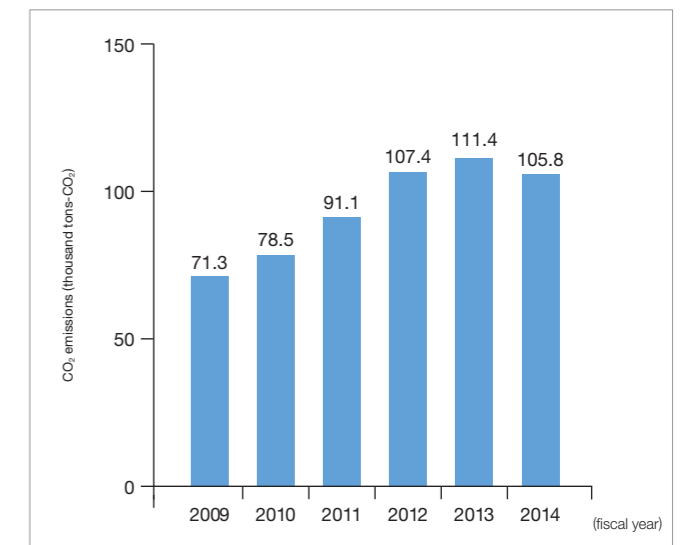
*1: Energy consumption per unit : The value obtained by dividing the energy consumption (crude oil equivalent) by the amount of activities*2
 *2: Values closely related to energy consumption (e.g., production output, production quantities)

Energy consumption per unit*1



Despite an increase in total energy consumption, that per unit was reduced by 15% in FY2014 from that in FY2005 thanks to energy-saving activities.

Trends in CO₂ emissions in Japan



Data gathered: Tochigi Works, Taga Works*3, Shimizu Works, Ome Works and Hitachi Reflecto, Inc.
 *3: Includes affiliate companies working with the above companies.

CO₂ emissions were calculated based on the CO₂ emission coefficient specified in the GHG Emissions Accounting, Reporting, and Disclosure System of the Act on Promotion of Global Warming Countermeasures. The CO₂ emission coefficient in electricity was calculated using the actual emission coefficients for electric power companies as published by the Ministry of the Environment (with the actual figure for FY2013 being used for FY2014).

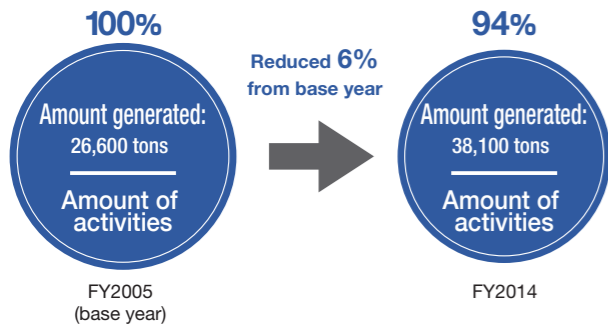
Effective Utilization of Resources

Hitachi Appliances reducing the amount of waste generated in production activities and such valuable materials as marketable resources, in order to make effective use of finite resources. We have been working to reduce the amount of waste and valuable materials generated per unit*1 since FY2013, in order to improve production processes, and set the goal of reducing said amount by 10% in FY2015 from that in FY2005.

The amount of waste and valuable materials generated per unit was reduced by 6% in FY2014 from that in FY2005. Additionally, five of our business sites*3 have achieved zero emissions*4 in an attempt to reduce the percentage of final disposals at landfills to zero.

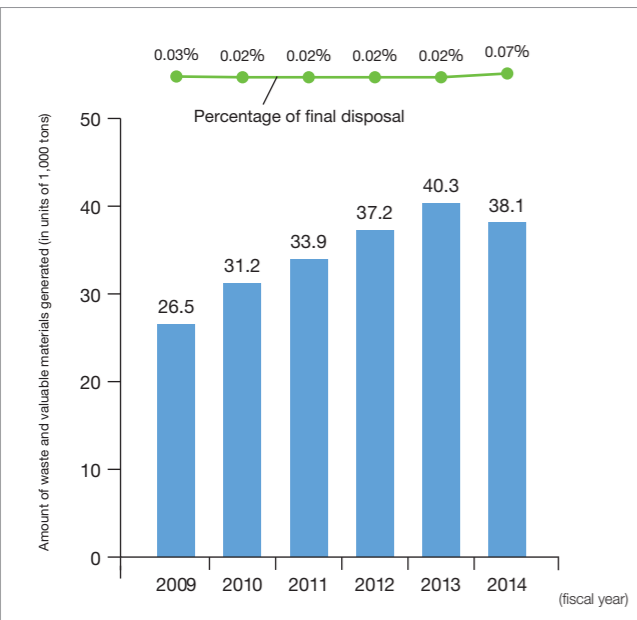
*1: Amount of waste and valuable materials generated per unit : The value obtained by dividing the amount of waste and valuable materials generated by the amount of activities*2
 *2: Values closely related to the amount of waste and valuable materials generated (e.g., production output and quantity)
 *3: The sites that achieved zero emissions include the Tochigi Works, Taga Works, Shimizu Works, Ome Works, and Hitachi Reftechno, Inc.
 *4: 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*5 in a given year must not exceed 0.5%, and that evaluate for each works.
 *5: Final disposal rate: The amount of disposal in landfill / waste and valuable materials generated.

Amount of waste and valuable materials generated per unit*1



Despite an increase in the amount of waste and valuable materials generated, that per unit was reduced by 6% in FY2014 from that in FY2005 thanks to waste reduction activities.

Amount of waste and valuable materials generated, and percentage of final disposal



Data gathered: Tochigi Works, Taga Works*6, Shimizu Works, Ome Works and Hitachi Reftechno, Inc.
 *6: Includes affiliate companies working with the above companies.

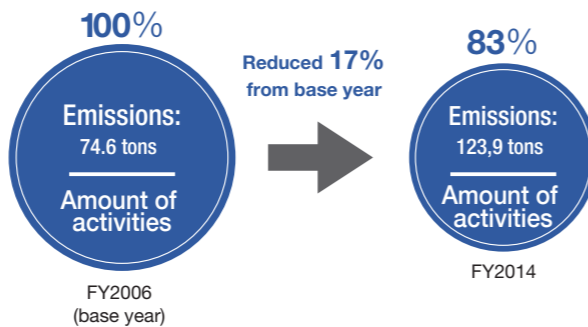
Management of Chemical Substances

Hitachi Appliances is reducing the atmospheric emissions of 41 volatile organic compounds (VOCs)*1 determined independently by the Hitachi Group, in order to help prevent air pollution. We have been working to reduce VOC atmospheric emissions per unit*2 since FY2013, in order to improve production processes, and set the goal of reducing said emissions by 11% in FY2015 from that in FY2006.

The VOC atmospheric emissions per unit were decreased by approximately 17% in FY2014 from that in FY2006.

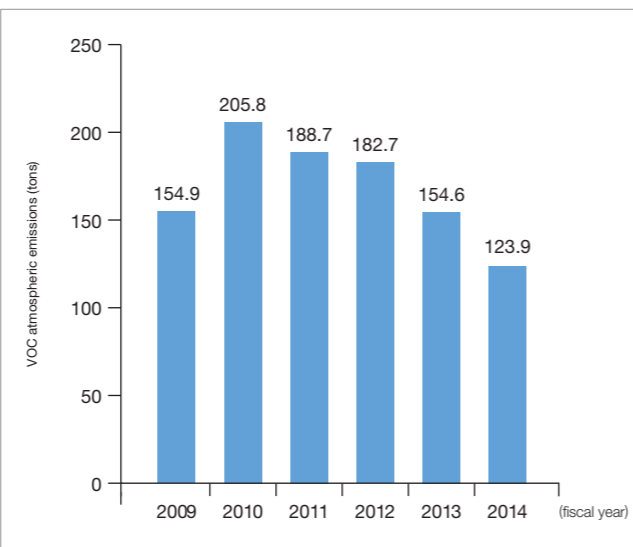
*1 VOC: Volatile organic compounds such as toluene, xylene and ethanol.
 *2: VOC atmospheric emissions per unit : The value obtained by dividing the VOC atmospheric emissions by the amount of activities*3
 *3: Values closely related to VOC atmospheric emissions (e.g., production output, amount of VOCs handled)

VOC atmospheric emissions per unit*2



Despite an increase in VOC atmospheric emissions by approximately 49 tons, that per unit was reduced by 17% in FY2014 from that in FY2006 thanks to improved production efficiency.

Trends in VOC atmospheric emissions



Data gathered: Tochigi Works, Taga Works*4, Shimizu Works, Ome Works and Hitachi Reftechno, Inc.
 *4 Includes affiliate companies working with the above companies.

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.

Promotion of Environmental Education

Hitachi Air-conditioning & Refrigerating Products (Guangzhou) Co., Ltd.
 China

In December 2014, Hitachi Air-conditioning & Refrigerating Products (Guangzhou) provided its employees and their children with educational opportunities to learn about the necessity and importance of environmental protection.

In the environmental protection class, the participating children observed the cells of plant roots and stems using microscopes that they had assembled. The class helped the children familiarize themselves with the environment by experiencing the link between plants and the environment in the microscopic world. On the factory tour, we showed the children their parents' workplaces, the sewage treatment plant and other facilities, and described out environmental activities.

This marked the first educational event of its kind, through which the children became more interested in environmental protection. We plan to continue such events in the future.



Children's Eco Club Held

Taiwan Hitachi Co., Ltd.
 Taiwan

Taiwan Hitachi held Children's Eco Club in May and June 2014 for a total of 181 children from the second and third grades of local elementary schools, in order to raise environmental awareness among children.

After watching a video giving an overview of the company, the children took a tour of the wastewater treatment facilities, EPS Styrofoam compactors, food waste composter, and other facilities in the factory. We described the treatment process at each site and posed questions to help the children learn about waste material sorting and recycling.

Such educational activities will be continued in the future to raise children's awareness of environmental protection.



Energy and Environment Day

Hitachi Consumer Products (Thailand), Ltd.
 Thailand

In September 2014, Hitachi Consumer Products (Thailand) held an in-house event called Energy and Environment Day. The Hitachi Appliances Energy Conservation Committee organizes this biannual event for raising the environmental awareness of employees.

An energy-saving slogan contest, a clever energy-saving contest, and other competitions were held during the event to have the employees think more deeply about environmental protection and energy conservation, thereby promoting their environmental awareness.

We will continue to help our employees raise their environmental awareness through such internal events.



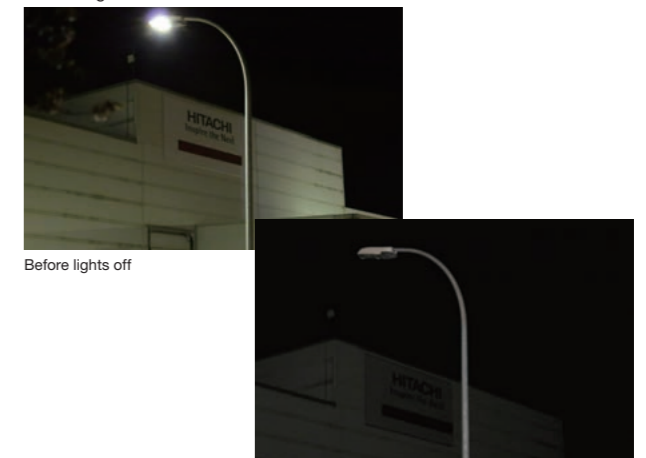
Hitachi Joins Global Light-off Campaign

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

On March 28, 2015, Hitachi Air Conditioning Products Europe S.A.U participated in Earth Hour*1 organized by the World Wide Fund for Nature (WWF). The outdoor illuminations in the premises of the company were turned off for an hour between 20:30 and 21:30 local time, during which we thought about the global environment. We also turned off the lights for six days between March 23 and 28 as an extended period of Earth Hour.

*1: An international event held by people around the world to share the desire to stop global warming and protect the Earth's environment by turning off lights for an hour at the same local time on the same local day

Outside lights



After lights off

CSR-DIW Award

Hitachi Compressor (Thailand), Ltd.
Thailand

Hitachi Compressor (Thailand) received the CSR-DIW Award presented by Thailand's Ministry of Industry.

CSR-DIW is a project promoting corporate social responsibility implemented since 2008, aiming to increase the international competitiveness of companies in Thailand. It requires companies to carry out CSR initiatives in the seven core categories specified in ISO 26000, including "organizational governance," "human rights," "labor practices," "fair operating practices," "consumer issues," and "community involvement and development." The CSR-DIW Award is given to companies whose efforts in such areas have been recognized. Hitachi Compressor (Thailand) received the award this time for its projects involving the education of teachers and students, and the repair and maintenance of school PCs (as part of building a sustainable environment) that were actively implemented as part of educational assistance in the communities.

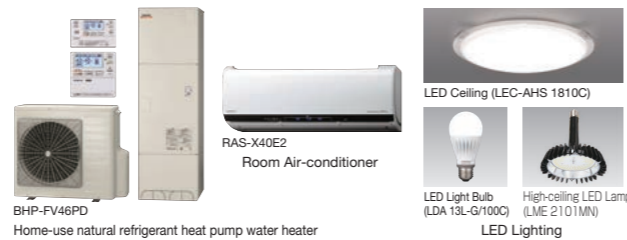


Three products win the 2014 Energy Conservation Grand Prize.

Hitachi Appliances Inc.
JAPAN

In the product and business model categories of the 2014 Energy Conservation Grand Prize awarded by the Energy Conservation Center Japan (ECCJ) and sponsored by the Ministry of Economy, Trade and Industry (METI), Hitachi's room air-conditioner Stainless Clean Shirokuma-kun X Series (a total of 15 models including RAS-X40E2) received the Minister of Economy, Trade and Industry Award, Home-use natural refrigerant heat pump water heater (a total of 75 models including BHP-FV46PD) received the ECCJ Chairman's Award, and a total of 52 models including LED lighting (housing LED lighting equipment) and LED ceiling (30 models including LEC-AHS 1810C) products, LED light bulbs (19 models including LDA 13L-G/100C), and facility-use LED lighting high-ceiling LED lamps (three models including LME 2101MN) received the ECCJ Chairman's Award.

Home-use natural refrigerant heat pump water heater and LED lighting received the Energy Conservation Grand Prize for the second consecutive year.



Visiting Lecture on the Environment at Local Elementary School

Tochigi Works,
Hitachi Appliances Inc.
JAPAN

In November 2014, representatives from the Tochigi Works of Hitachi Appliances visited 62 fourth-graders at a local elementary school to give a lecture on the environment.

In the class, the children learned how used household appliances were recycled and factory wastewater was purified from a video, and they measured the cloudiness of factory wastewater using a transparency meter that they had made for themselves.

Through the class, we help children understand the importance of sorting and recycling waste materials in an effort to raise their environmental awareness.



Participation in Pine Planting at Miho Beach

Shimizu Works,
Hitachi Appliances Inc.
JAPAN

On February 7, 2015, the Shimizu Works of Hitachi Appliances participated in pine planting at Miho Beach, Shimizu-ku, Shizuoka city, which was organized by the Shizuoka City Association for Environmental Safeguards. This event was held as part of celebrating the Association's 10th anniversary for conveying the importance of forest preservation to younger generations.

The event was participated by 166 people from 24 Association member companies including the Shimizu Works of Hitachi Appliances. A tree surgeon, Mr. Toshihiro Kurusu, described the planting technique using charcoal and mycorrhizal fungi that would facilitate the growth of Japanese black pines for reforestation, which was followed by the planting of 200 seedlings of nematode-resistant Japanese black pines.



Beach Cleaning

Taga Works,
Hitachi Appliances Inc.
JAPAN

In July 2014, employees at the Taga Works of Hitachi Appliances cleaned Kawarago Beach of Hitachi city located near the office before the beach was opened for the swimming season.

This cleaning has been done for nearly half a century since 1965. About 100 employees joined the event and cleaned the areas around Eboshi-iwa (rock).



Cleaning of Area Around the Office

Ome Works,
Hitachi Appliances Inc.
JAPAN

In November 2014 and March 2015, employees at the Ome Works of Hitachi Appliances cleaned inside the company premises and the surrounding roads.

This activity is done every year as part of the nationwide Fire Prevention Campaign. About 30 employees joined the event and collected various types of waste, such as cigarette butts and plastic bottles.



| | |
|----------------------|--|
| 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 | 688.8 billion yen (for the fiscal year ended March 31, 2015) |
| Consolidated number of employees | 18,900 (as of the end of March, 2015) |
| Website | http://www.hitachi-ap.com/ |

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 Qiluoshan 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, Binictan Drive Subic Bay Industrial Park phase II, Subic Bay Freepport 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 | | |
| 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 |
| 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 | Kitanohon Branch Office |
| Fukushima Marketing Branch | Kanto & National Account 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 (Home & Eco Appliances Group)

| | |
|-----------------------------|-------------------------|
| Kitanohon 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. |
| Hitachi Air Conditioning Kyushu 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: FY2014 (1 April, 2014 to 31 March, 2015)
- Scope of Reporting: Hitachi Appliances, Inc. and its consolidated subsidiaries (Where the scope is different from the above, describe it is so indicated.)
- How to set the base year data: JIS Q 14064-1:2010 "Greenhouse gases - Part 1: Specification with guidance at the organization level for quantification and reporting of greenhouse gas emissions and removals" is referred.
- Reporting cycle: Issued annually as an annual report
- Website: (Japanese version only) <http://www.hitachi-ap.co.jp/corporate/environment/kankyo/>
- Guidelines referred: "Environmental Reporting Guidelines 2012" (Ministry of the Environment)
"Environmental Performance Indicators Guidelines for Businesses 2002" (Ministry of the Environment)
"Environmental Reporting Guidelines 2001 -With Focus on Stakeholders" (Ministry of Economy, Trade and Industry)

Photo on the front page

African elephants living in sub-Saharan Africa with 6 to 7.5 meters in length, 3 to 4 meters in height, and 5 to 7.5 tons in weight. Largest animals among currently-living land animals. Designated as endangered IB species (EN) in the Red List of International Union for Conservation of Nature and Natural Resources (IUCN).

Contact Address

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