Living

Digital Media Devices

Image and Information Equipment

Consumer Appliances

Energy Conservation Achieved in Home Appliances through Drying and Cooling Systems Based on Unique Technology

As being global environment conscious is becoming more and more important, Hitachi is working to make further improvements in energy conservation in home appliances by recovering and reusing the heat and cool air that would be discharged and rendered useless in previous models, thereby promoting higher levels of energy conservation in home appliances such as washer-dryers and refrigerators.

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Energy Conservation Achieved by Recovering and Reusing Heat and Cool Air

As home appliances grow in capacity while becoming increasingly multifunctional, unless something is done, they will also consume more and more electricity with no end in sight. In order to reduce electricity consumption while achieving larger capacities and a higher level of multifunctionality, it will be necessary to apply energy conservation technologies based on new ideas that did not exist in the past. To achieve this goal of energy conservation, we are working to recover and reuse the heat generated by a working appliance, as well as cool air that has not been used in the past.

A Drying System that Recovers and Reuses Heat

This drying system, which uses technology that recovers heat generated by the operation of the washer-dryer and reuses it to dry the clothes, was first included in the front-loading washer-dryers that were launched in Japan in October 2008 (BD-V3100 and BD-V2100). With this drying system, heat generated by sources such as the motors driving the drum and the high-speed fan is used to dry the clothes, thereby achieving a power consumption of only 980 Wh (for a standard 6-kg course of washing and drying). In order to rein in power consumption even further, we have also developed a drum motor that can switch between different circuits for washing or for removing water from the clothes at high speed during the spin cycle, as well as a mechanism for tilting the drum up to make it easier for clothes to switch places during the drying cycle. These additional innovations in energy conservation performance have enabled us to release even more efficient models in October 2009 (BD-V3200 and BD-V2200) that only consume approximately 950 Wh (for a standard 6-kg course of washing and drying).

A Cooling System that Reuses Frost for Cooling

The improvement of energy conservation performance in refrigerators has also become an issue as refrigerator capacity increases. To this end, our new system was inspired by the idea that the frost that adheres to the cooler (evaporator) in the back of the freezer compartment can be reused for cooling. In traditional cooling systems, frost on the cooler would simply be melted and discarded, but the new technology applied to this cooling system takes the cool air generated by this frost and reuses it by sending it through the refrigerator and vegetable compartments to take advantage of its cooling effect. This technology was introduced in a large-capacity refrigerator series that was first launched in Japan from September 2009. Ordinarily, a compressor is used to cool the inside of a refrigerator, but with this new cooling system, the cool air generated by the frost can be used for cooling even when the compressor is not running, thereby making it possible to reduce the electricity consumed by compressor operation. Thanks to this innovative cooling system and other improvements, among the models offered, the two highest-capacity models R-Z6200 and R-SF62ZM, which offer an interior volume of 616 L, achieve a power consumption level of 360 kWh/year,*1 thereby improving energy conservation performance by approximately 10% over the previous year's models.*2 This system, with its high degree of thermal efficiency, was born of a simultaneous examination for saving two separate issues of efficiently removing frost that attaches to the cooler, and of increasing the efficiency of the cooling operation. We at Hitachi will continue using our unique technologies and methods to promote energy conservation by reducing the burden our products place on the environment to the bare minimum.

*1 Numerical values given for annual power consumption are derived using the measurement and calculation methods stipulated by JIS C 9801 (2006 version).

*2 Compared with the 400-kWh/year power consumption figure for the previous year's R-Y6000 and R-SF60YM models.

New High-definition Plasma/LCD Television Series

High-definition plasma and LCD (liquid crystal display) televisions offering recording and network features are being gradually released to the Japanese market in the new series, starting in March 2010. These televisions are classified according to their features into a three-series lineup, including the XP05, HP05, and H05 series. In addition to these recording and network features, this article also introduces the high image quality of the XP05 series of models, which include "super resolution technology."

[Key features]

(1) Recording

These television models include an internal 320-GB HDD (hard disk drive), and by utilizing the XCodeHD*1 advanced HD (high-definition) transcoding/translation technology, can record for a long time equivalent to eight times the usual amount of broadcast high-definition programming.*2 This means that up to a maximum of approximately 256 hours of high-definition quality programming can be enjoyed.*3 In addition, thanks to the three terrestrial digital tuners and two BS (broadcasting satellite) and 110° CS (communications satellite) digital tuners, it is possible to record two different channels at the same time while simultaneously watching a program on another channel.*4 Furthermore, these models support the iVDR-S*5 (information versatile device for removable usage—secure) cassette-based HDD, which can be used not only to increase recording capacity, but also to organize recordings by family member or program.

(2) Network

These models support "acTVila*5 Video-Full/acTVila Internet Video Download*6," whereby a broadband line can be connected in order to enjoy a full range of high-image-quality content on the television, as well as to download a wide range of high-definition video content to the internal HDD. In addition, it includes a home network [DLNA*5 (Digital Living Network Alliance)] feature that connects DLNA-compliant devices and thin-screen televisions over a home network connected via LAN (local area network), so that photographs, video, and programs recorded to the television's internal HDD can be played back on televisions, personal computers, and other devices in different rooms.

(3) High image quality

Hitachi Consumer Electronics Co., Ltd. has developed and applied a new super resolution technology that improves the resolution in the diagonal direction as well as the sense of resolution of the overall screen by using a Hitachi-developed proprietary signal processing circuit to take input signals and analyze them by pixel for the image parts of each pixel's information, thereby restoring data that is no longer recognized as a valid signal component in the data compression process to the original resolution state. After high-precision noise removal, an improvement process optimized for the definition level is applied to each part of the image, making it possible to reproduce clear high-definition images with a sense of depth.

Also, in addition to the external light, illumination, and other information provided by sensors incorporated into the front surface of the television, Hitachi's proprietary algorithms and high-quality imaging technology analyze the programming genre and image scene in order to automatically optimize image quality. This makes it possible to enjoy image quality suited to the viewing environment without the need for complicated settings.

(Hitachi Consumer Electronics Co., Ltd.)

*1 XCodeHD is an HD transcoding/translation technology created by ViXS Systems, Inc.
*2 In TSX8 mode. Compared with the recording of BS digital high-definition broadcasts in TS mode.
*3 In TSX8 mode.
*4 When two BS/CS broadcasts are recorded simultaneously, the viewing of BS/CS broadcasts is limited to one of the broadcast stations being recorded.
*5 See "Trademarks" on page 87.
*6 acTVila Video-Full/acTVila Internet Video Download is a service provided by Actvila Corporation.

XP05 series "P50-XP05" high-definition plasma television

CP-A200 Projector with 3,000 lm and an Ultra-short Throw Distance

The CP-A200 features two of Hitachi Consumer Electronics Co., Ltd.'s technologies: a free-shaped lens and a mirror projection system. It can project large images onto a 77-inch (196-cm) interactive whiteboard from a distance of only 31 inches (80 cm), and reduces the appearance of shadows from the presenter's hands and body on the whiteboard. The CP-A200 provides a high brightness level of 3,000 lm, which allows the projection of images that are easily visible, even in bright rooms. This projector has two different types of filters and requires less frequent maintenance and cleaning, which makes longer operation possible.
(Hitachi Consumer Electronics Co., Ltd.)

CP-A200 projector

Big Drum, Front Loading Washer-dryers Featuring Heat Recycling and Air Iron

Hitachi Appliances, Inc. has released two new front loading washer-dryer models (Japan model: BD-V3200 and BD-V2200) that use a strengthened proprietary "Air Iron" function to improve how clothes turn out, while simultaneously raising water and energy conservation performance as well.
[Key features]
(1) "Air Iron" uses the power of a high-speed wind reaching approximately 300 km/h*1 to stretch the wrinkles out of clothes, while keeping the drying temperature of the clothes down to approximately 60℃*2 or lower, thereby drying the clothes while preventing the shrinkage and warpage that can occur when cut and sewn clothes, socks, and other items sensitive to heat are put in a dryer. Also, by raising the angle of the drum, which is leaning back during drying, "drum orientation control" makes it easier for clothes to move forward and backward, thereby preventing uneven drying.
(2) "Sensor-controlled big-drum washing" uses three sensors to control washing by detecting the type and amount of laundry, and two showers on the left and right use cyclical pumps for washing and other functions, resulting in excellent washing power and the number one water conservation performance in the industry.*3
(3) The heat generated by operation is recovered for reuse in drying in a "heat-recycled drying" system. In addition, the drum motor can switch operational circuits between the ones used for washing and the ones used for high-speed spin, thereby achieving power consumption of approximately 950 Wh when washing and drying 6 kg of clothes.
(Hitachi Appliances, Inc.)


BD-V3200L (N) big drum, front loading washer-dryer featuring heat recycling and Air Iron

*1 Calculated based on the area of the air outlet and the volume of air.
*2 Standard course of washing and drying with 6 kg of clothes.
Measured by Hitachi by affixing temperature sensors to test clothes specified by The Japan Electrical Manufacturers' Association.
*3 BD-V2200, as of December 18, 2009. 9-kg washing/6-kg drying class. With 6 kg for both washing and drying, using the standard amount of water. Approximately 55 L. With 9 kg for washing, using the standard amount of water (65 L).

Premium Cleaner with a Two-stage Boost Cyclone Chamber

Hitachi Appliances, Inc. has released a premium-class cleaner (Japan model: CV-RS3100) with a proprietary two-stage boost cyclone chamber in its dust collector.

CV-RS3100 premium-class cleaner with a two-stage boost cyclone chamber

[Key features]

(1) The two-stage boost cyclone chamber is comprised of two vertically arranged stages. A "cyclone" (swirling flow of air) is generated by accelerating, or "boosting" air in the first stage's cyclone chamber, resulting in a long-lasting suction force. Dust is then compressed in the dust case of the second stage, which makes the process of throwing it away both simple and clean.

(2) Air passing through the dust case goes through a rectification filter and a high-density dust collection filter in a proprietary flow path structure, capturing approximately 99% of the dust in the air down to a fineness of 0.3 μm. In addition, multiple filters capture cedar pollen and mites (including mite feces and corpses).

(3) The CV-RS3100 includes a motor drive head that is both easy to operate and easy to clean with its wider mouthpiece. A sensor detects the floor type and automatically controls the power, thereby reducing power consumption by up to a maximum of approximately 75%*. In addition, attachments such as the widely curving & long mouthpiece are easy to handle for access to dust anywhere, from narrow gaps to high places.

(Hitachi Appliances, Inc.)

* Comparing power consumption between automatic mode and strong operation for six minutes of cleaning the wooden floor. Automatic mode: Approximately 23 Wh, Strong operation: Approximately 91 Wh. Dust removal performance is equivalent.

Improved Cleanliness and Comfort with the Room Air Conditioner

Hitachi Appliances, Inc. has released a room air conditioner that pursues cleanliness and comfort with an "Ion Mist" feature, stainless steel components, and a new remote controller.

[Key features]

(1) The indoor unit's pre-filter, ventilating flue, and up/down air deflection plates are made of a stainless steel construction, and the indoor unit's fan uses silver ions to sterilize bacteria. In addition, the titanium heat exchanger has antibacterial, deodorizing, and antifungal properties that prevent problems inside the air-conditioner such as dirt and mold. Furthermore, the pre-filter offers an automatic cleaning function that spares the owner the hassle of cleaning.

(2) The "Ion Mist" preserves the skin's moisture and improves hair cuticles. This feature reduces the movement of allergenic pollen substance and suspended mold particles.

(3) Thanks to its internal lithium battery and solar panel, this remote controller can be used without the need for a dry-cell battery for a long time. Moreover, it can display an indication of the cost of electricity as well as CO_2 emissions. Also, by placing the remote controller nearby, users can enjoy a comfortable and energy-saving "Area Eco" mode whereby a sensor built into the remote controller will intercommunicate with the indoor unit so as to provide targeted partial air conditioning in response to the user's location.

(Hitachi Appliances, Inc.)

Overview image (left) of the room air conditioner and a new remote controller (right)