

# Smart Life & Ecofriendly Systems

## 1 Connected Appliances: Camera-equipped Refrigerator

Hitachi has released the HXCC-type of large-capacity refrigerator connected home appliance which is equipped with a refrigerator camera<sup>\*1</sup> that allows users to check the foodstuffs in the refrigerator with a smartphone app from outside the home.

The key features are as follows:

- (1) The camera installed in the upper part of the refrigerator unit automatically films the refrigerator shelves and the left and right door pockets when the refrigerator door is opened, and the images can be checked from the application for Hitachi refrigerators. This reduces the number of cases where the user forgets to buy something or repurchase food ingredients already on-hand to support daily foodstuff management.
- (2) Featuring a thin wall design in the ceiling section and other areas, it expands the rated internal capacity by 15 L over existing units while maintaining a width of 685 mm to achieve a large capacity size of 617 L<sup>\*2</sup>. To improve usability, the top shelf of the refrigerator can now store 500 mL plastic bottles in an upright position.
- (3) The refrigerator adopts the moisture cooling feature<sup>\*3</sup> to keep the entire shelving space at a temperature of approximately 2°C and a humidity of approximately 80%.

The low temperature storage of approximately 2°C maintains freshness for a long period of time no matter where food is placed, and the high humidity reduces dryness. (Hitachi Global Life Solutions, Inc.)

\*1 Depending on the location where foodstuffs are stored, some areas may not be recorded by the camera.

\*2 Based on a comparison of the R-HXCC62S FY2022 product (rated internal capacity of 617 L) and the R-HX60R (rated internal capacity of 602 L) FY2021 product.

\*3 Moisture cooling does not include the door pockets.

## 2 New Refrigerator Concept “Chiiil”

Hitachi has released a new concept for refrigerators, called “Chiiil,” which can be placed in places other than the kitchen such as the living room or bedroom, combined with multiple units\*, and used according to user lifestyle and preferences.

The key features are as follows:

- (1) In addition to a design with a depth of 420 mm that makes it easy to match with furniture, this refrigerator can be installed flat on the back against the wall and has specifications that make it easy to place in various locations such as the living room, bedroom, dining room, and workspace. Two units can be combined horizontally or vertically.



1 HXCC-type refrigerator equipped with refrigerator camera

# Chiiil



## 2 New refrigerator concept "Chiiil" R-MR7S

(2) Ten color variations selected for compatibility with different interiors create a space according to user preferences. They are easy to match with various spaces such as the living room and bedroom and can be coordinated with the individuality of the interior.

(3) Choose temperature modes from refrigerator (approximately 2°C, 4°C, or 6°C) and cellar (approximately 8°C, 12°C, or 16°C) according to the type of food that users wish to store. Moreover, the inside layout can be adjusted by changing the shelf positions according to food size. (Hitachi Global Life Solutions, Inc.)

\* Clearance of 5 mm or more must be maintained on the left and right sides of the unit as space for heat dissipation.

## 3 Front-loading Washer/Dryer

Hitachi has released a front-loading washer/dryer that reduces the hassle of cleaning the dryer filter, which had to be performed each time the dryer was run, by adopting a filterless drying structure.

The key features are as follows:

(1) Adopts a filterless drying structure which eliminates the drying filter on the top of the unit, washes away dust and lint<sup>1</sup>, with three automatic cleaning features consisting of automatic drying duct cleaning, automatic washing machine tub cleaning, and automatic door gasket



## 3 BD-STX120H front-loading washer/dryer

cleaning, and captures it with its large capacity lint filter. By increasing the capacity<sup>2</sup> of the lint filter, the frequency of lint removal is decreased by throwing away one month's worth of dust and lint all at once<sup>3</sup>.

(2) Aluminum plates were adopted to increase the heater capacity of the drying unit and improve the dehumidifying performance to achieve a shorter drying time than conventional models<sup>4</sup>. Moreover, a humidity sensor was added to reduce uneven drying, and the Wind Iron function blows on the clothing with a high-speed wind of roughly 300 km/h to smooth out wrinkles and leave clothes looking beautiful.

(3) Users can now select the course from the smartphone app, based on operation time.

(Hitachi Global Life Solutions, Inc.)

\*1 May not be able to wash away dust, lint, and dirt depending on the type and degree.

\*2 Capacity was increased by changing the shape from the conventional comb-type to a box-type of filter.

\*3 Tested by Hitachi Global Life Solutions. When operated once a day in a washer-dryer cycle with 6 kg. Results may differ depending on the volume and type of clothing.

\*4 Based on a comparison of the new BD-STX120H product (approximately 98 minutes) and the BD-STX110G 2021 model (approximately 132 minutes).

## 4 Cordless Stick Vacuum Cleaner

Hitachi has released the PV-BH900SK cordless stick vacuum cleaner, which has a recycled plastic usage rate of 40% or more.

The key features are as follows:

- (1) Through the active utilization of recycled plastic, the usage rate was increased to 40% or more<sup>\*1</sup>. In addition to using recycled plastic in the charging stand, cleaning tools, and other accessories and exterior parts, the product was designed with recyclability in mind by eliminating painting, printing, and other secondary processing as much as possible.
- (2) Equipped with the newly developed powerful fan motor to increase the static pressure by approximately 20%<sup>\*2</sup> compared to conventional models while maintaining a light standard weight<sup>\*3</sup> of 1.7 kg. The newly equipped turbo operation firmly picks up dust inside carpet.
- (3) The charging time<sup>\*4</sup> was shortened from the conventional time of approximately 3.5 hours to around 2



4 Cordless stick vacuum cleaner PV-BH900SK (left), state when stored in the charging stand (right)

hours. Moreover, it incorporates a new telescopic crevice tool, which easily cleans crevices in furniture and other narrow spaces by extending and contracting according to how it is used.

The PV-BH900SK earned the Good Design Gold Award at the GOOD DESIGN AWARDS 2022 hosted by the Japan Institute of Design Promotion.

(Hitachi Global Life Solutions, Inc.)

\*1 Uses 40% or more recycled plastic compared to the weight for the plastic materials used in the product unit handle cover, charging stand, and other accessories.

\*2 Tested by Hitachi Global Life Solutions. Measures the static pressure of the unit inlet at maximum power. PV-BH900J FY2021 model: approx. 12,500 Pa, PV-BH900SK: approx. 15,000 Pa

\*3 Total weight of body, extension pipe, head, and battery. Measurements based on the voluntary standards (HD-10) of the Japan Electrical Manufacturers' Association.

\*4 Measured at a room temperature of 20°C under the voluntary standards (HD-10) of the Japan Electrical Manufacturers' Association. The charging time may differ depending on conditions such as the usage, ambient temperature, and remaining battery charge.

## 5 Health-conscious Superheated Steam Microwave Oven

Hitachi has released the MRO-W10A health-conscious superheated steam microwave oven in its series of connected home appliances.

The key features are as follows:

- (1) Equipped with Hitachi's custom<sup>\*1</sup> ceramic tray and convection & grill cooking which wraps food in a hot blast of air and heats it all at once with high heat to seal in the meat flavor and cook it to juicy perfection. It uses a new structure in which the ceramic tray is installed on the pan stop shelf and places an iron grid tray with a new shape on top of it. Placing the seasoned ingredients on the iron grid tray, it will automatically control the range, oven, superheated steam, and grill to cook food at any heat level. Because it determines the surface temperature of the food with a sensor, it can cook according to the portion size, whether it is frozen or refrigerated.



5 MRO-W10A health-conscious superheated steam microwave oven

(2) It incorporates three new menus in the crunchy vegetable menu which cooks deliciously crisply vegetables for a total of 11 available menu options. Rapidly heats up food with a high heat at a maximum of 1,000 W<sup>2</sup> and finishes in a short period of time to reduce the vegetable water content and cook while maintaining the crispy texture and nutrients<sup>3</sup>.

(3) Links to a smartphone with the app to suggest recommended recipes each day based on user preferences. (Hitachi Global Life Solutions, Inc.)

\*1 The ceramic tray can be set on the bottom of the oven, upper, middle, and lower levels to be used for direct cooking.

\*2 The 1,000 W maximum output of the auto cooking range is a short-term output feature, and the output automatically changes during operation. This feature only works during limited auto-cooking menus.

\*3 Compared with the MRO-W10X model, which is not equipped with the crunchy vegetable menu feature.

## 6 Remote Monitoring/Predictive Diagnosis IoT Solution “exiida” for Air Conditioning

As a result of the amendment<sup>1</sup> to the Act on Rational Use and Appropriate Management of Fluorocarbons (hereinafter, Fluorocarbon Emission Control Act) which was enacted in August 2022, continuous monitoring systems for commercial freezers and refrigeration equipment<sup>2</sup> have become positioned as a replacement for the simple inspections that were visually performed until now.

The Fluorocarbon Emission Control Act requires one or more simple inspections every three months for the advance prevention of leaks of fluorocarbon gas, which is used as an equipment refrigerant. Therefore, the manager (customer or facility manager, etc.) must observe the requirement to perform a visual inspection of the equipment as well as record and store the inspection results. In the event of a violation, the manager may be subject to punishment.

The remote monitoring and predictive diagnosis IoT solution “exiida” for air conditioning can replace the simple

inspections of commercial freezers and refrigeration equipment established by the Fluorocarbon Emission Control Act. As a result, this solution helps to reduce the workload.

\*1 Act on Rational Use and Appropriate Management of Fluorocarbons (Act No. 64 of 2001), Article 16, paragraph 1 partially amended

\*2 Class I specified products established in the Act on Rational Use and Appropriate Management of Fluorocarbons

\*3 This service is available only in Japan.

## 7 Connected VRF Equipped with High Energy Efficiency and Functionality

Hitachi has released variable refrigerant flow (VRF) that improves energy efficiency as an initiative for carbon neutrality, adds features for cold regions, and supports built-in exiida communication units in the outdoor unit (service scheduled to start in the first half of 2023).

(1) High coefficient of performance (COP) models recommended for the promotion of net zero energy buildings (ZEBs) were added to the lineup (TZ and TZX series).

(2) They maintain the rated capacity down to an outdoor temperature of -7°C while heating<sup>1</sup>. In addition, heating operations can be continued down to a temperature of -25°C<sup>2</sup> (TG and TGX series).

(3) The exiida communication unit can be built into the outdoor unit, which eliminates the need for mounting space and a dedicated power supply (service scheduled to start in the first half of 2023).

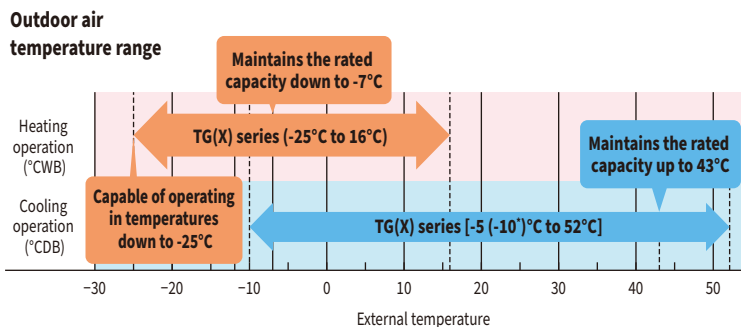
In addition to limiting lost business opportunities due to sudden failures, the exiida remote monitoring and predictive diagnosis service can take the place of the simple inspections of the Fluorocarbon Emission Control Act. [Hitachi Global Life Solutions, Inc. (sales), Hitachi-Johnson Controls Air Conditioning, Inc. (manufacturing)]

\*1 When the cold region feature is set. The TG and TGX400 models maintain the rated capacity down to a temperature of -4°C.

\*2 When the TGX is in full heating operation.

Type of inspection	Previous/Current	All class I specified products	Air conditioners		Refrigerator and freezer equipment	Personnel dispatch requirement
		Less than 7.5 kW	7.5 kW or more, less than 50 kW	50 kW or more	7.5 kW or more	
Simple inspection	Previous	Required (one or more times in three months), visual verification (qualifications not required)				Required
	Current	Can be replaced by exiida remote monitoring and predictive diagnosis				Not required
Periodic inspection	Unchanged	Not required	Visual verification by a qualified person is required			Required
			One or more times in three years	One or more times per year		

6 Inspection details established by the Fluorocarbon Emission Control Act



\*Using the low outdoor air setting.

7 Connected VRF equipped with high energy efficiency and functionality

## 8 New Water-cooled Screw Chillers Using Low-GWP Refrigerant with Global Warming Potential of One

Hitachi has assembled a lineup of models that adopt a low global warming potential (GWP) refrigerant [Hydrofluoroolefin (HFO) R1234yf] in the MATRIX ADVANCE water-cooled cold screw for the sake of energy efficiency and serviceability.

The key features are as follows:

- (1) Adopts a low GWP refrigerant (HFO R1234yf)  
R1234yf is a refrigerant that reduces the global warming potential by more than 99% compared to the previous R134a refrigerant and has a GWP value of 1<sup>1</sup>.
- (2) Support for the Fluorocarbon Emission Control Act is not required<sup>2</sup>  
Equipment that adopts R1234yf is not covered by the Fluorocarbon Emission Control Act. Therefore,

inspection and maintenance records do not need to be saved, and legal compliance for leakage reports is not required.

(3) The product height was reduced from the 2,000 mm of the previous model to 1,670 mm to make it easier to transport.

(4) The screw compressor with continuous control specifications does not require harmonic countermeasures.

Because it is equipped with a screw compressor with continuous control specifications through a slide valve that does not use an inverter, harmonics are not generated. [Hitachi Global Life Solutions, Inc. (sales), Hitachi-Johnson Controls Air Conditioning, Inc. (manufacturing)]

<sup>1</sup> Source: JRA GL-08\_2020R “Guideline for Shapes of Service Ports and Indications on Air Conditioning and Refrigeration Equipment” 100 years of GWP values

<sup>2</sup> Legal compliance is required for equipment that uses R134a



Note: The left side of the photo shows two units installed consecutively with the cover specification while the right side shows the no-cover specification (frame side cover option sold separately). This unit is designed to be installed indoors.

8 MATRIX ADVANCE water-cooled cold screw