

Overview

Pursuing “Value” in Home Appliances

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PREMIUM STRATEGY FOR HOME APPLIANCES

HITACHI has consistently sought to achieve energy efficiency in its home appliances, seeing it as an important aspect of product performance. Since FY2006, it has also been pursuing a “premium strategy” that seeks to create products that provide consumers with “new value” as well as energy-saving performance.

In its product development practices, Hitachi has also used common concepts for development objectives across its range of home appliance products by selecting key words that express new value for each year, choosing “impressive value” in FY2006, “convincing value” in FY2009, and “practical value” in FY2011.

In addition to the universal requirement that home appliances be simple and convenient, Hitachi chose for FY2013 the key words “quality value,” by which it means it is seeking to create designs that are pleasant to use and convey a sense of quality.

The key words for this year (FY2014) are “empathetic value,” which means the use of unique

technology to create attractive “value” that triggers a positive emotional response in consumers. This concept is embodied in all Hitachi’s product development (see Fig. 1 and Fig. 2).

In Japan, Hitachi has been researching people’s ways of life, attitudes, and values, which have been undergoing major changes in recent years, to identify which new functions will deliver “empathetic value.” Overseas, Hitachi is seeking to enhance product value not only through “Made in Japan” products developed and manufactured in Japan itself, but also by using core technologies developed in Japan as a base for the development at overseas sites of products for countries with diverse cultures and living practices.

Benefits of Selecting “Key Words”

Deciding what to develop is the most important aspect of product development. It is a useful practice to select “key words” to act as catalysts or objectives for the product development process, including the exploration of development concepts, the working through of ideas, and the sharing of concepts between developers.



Fig. 1—Premium Products for FY2014.

These premium products use unique technologies to achieve “empathetic value.”

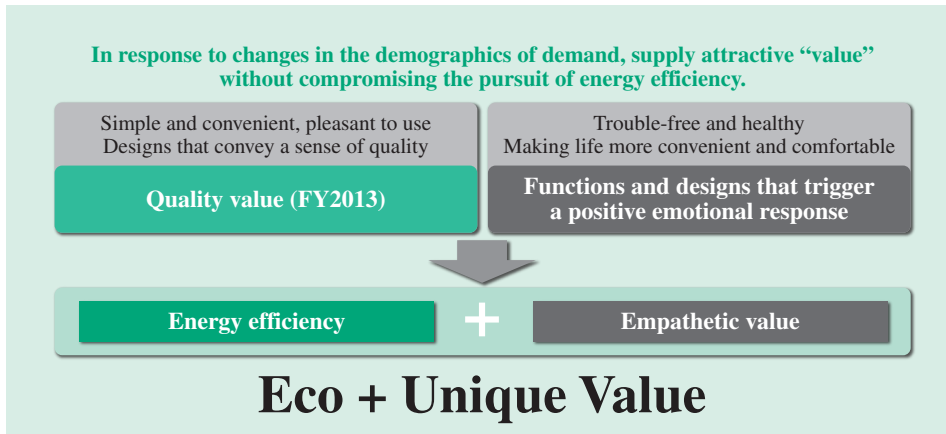


Fig. 2—Premium Strategy for FY2014.
In addition to energy efficiency performance, the key words are “empathetic value,” which means attractive “value” that triggers a positive emotional response in consumers.

DEALING WITH INCREASINGLY DIVERSE WAYS OF LIFE

Japan is a mature market for home appliances with a high level of market penetration and a very demanding consumer base. As home appliances play an important role in daily life, changes in consumer lifestyles and attitudes are important factors in product development. Hitachi pays careful attention to these changes and works to offer forms of value that anticipate what consumers want by seeking out and giving shape to latent as well as explicit needs.

Due to the aging of the population and the falling birth rate, both of which have accelerated since around 2010 as the baby boom generation, which makes up the bulk of the population, approach retirement age,

the fall in the number of people per household and the rise in the number of small households are also both accelerating. In particular, the number of single, married-couple, and other small households is rising, especially among the elderly. There has been a shift in requirements toward functions and other specifications that suit such households, the impact of which has been, in some cases, a major change in the breakdown of demand by product type.

Since the era of rapid economic growth in Japan during the 1970s, the “standard household” has been assumed to consist of a married couple with two children, and use by a four-person family household has been the reference criterion in product development for things like washing machine capacities and the ingredient quantities in microwave oven recipes.

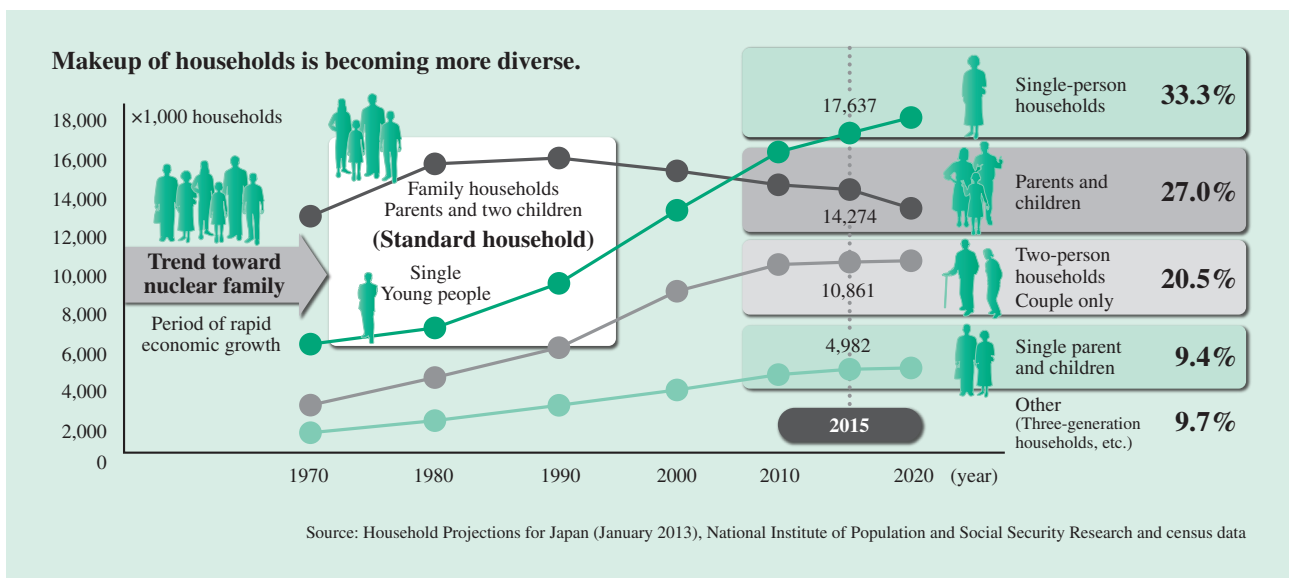


Fig. 3—Changes in the Demographics of Demand.
The makeup of households is becoming more diverse, with the falling number of nuclear families made up of parents and children being accompanied by a rise in the number of small households such as those consisting of one person or a couple only.

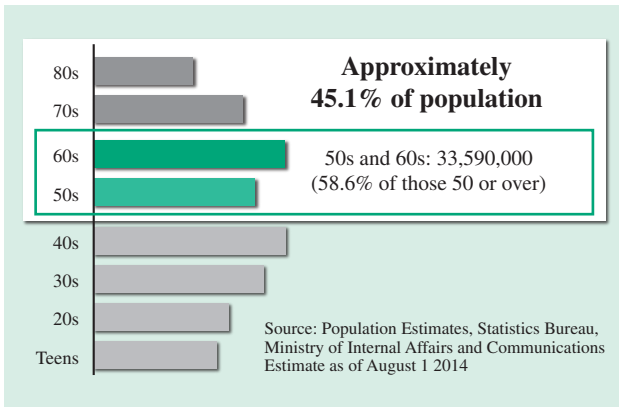


Fig. 4—Population by Age (August 2014). Japan has become a “super aging society” in which roughly half the population (approximately 45.1%) is 50 years or older.

In practice, however, the number of single-person households has outstripped the number of parent and child households since 2005, with small households of one or two people accounting for more than half of the total in 2015, and it is predicted that this diversity of household structure will continue to grow (see Fig. 3).

As a consequence, parent and child households are no longer the majority and development criteria are being reassessed on the assumption that consumers are becoming more diverse.

Another major change is the rapid emergence of what is known in Japan as the “super aging society.” As of August 2014, approximately 25.8% of the population are age 65 or over and 45.1% age 50 or

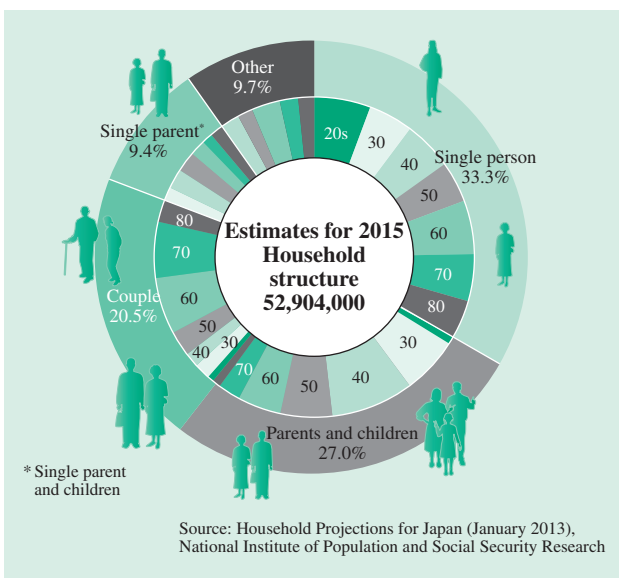


Fig. 5—Estimated Makeup of Households in 2015. Hitachi surveyed people’s living practices categorized by the number of people in the household and their age group.

over, meaning that roughly one in every two Japanese are in the 50 and over “senior” demographic (see Fig. 4).

While those in their 50s and 60s, who make up about 60% of the senior demographic, are active participants in hobbies and other leisure activities as well as work, they also tend to have a strong interest in health matters due to age-related fitness concerns, etc.

In seeking to undertake product development in ways that take account of this growing consumer diversity, Hitachi has carried out field surveys of consumers’ attitudes and other living practices categorized by age group and number of people per household (see Fig. 5). Being trouble-free, healthy, and simple are recognized as playing an important part in consumers’ needs, and Hitachi has adopted these as issues to address in its product development.

PRODUCT DEVELOPMENT FOR OVERSEAS MARKETS

Hitachi is also pursuing a premium strategy in overseas markets, which are crowded by the presence of numerous other competing suppliers, including Japanese, Korean, European, American, and Chinese companies as well as local manufacturers. With all of these manufacturers seeking to develop products that are appropriate for the market, there is an ongoing trend toward convergence in things like product specifications, design, and price.

To convey a clear sense of the “Hitachi” brand value in such a market environment, Hitachi develops premium products that provide consumers with new forms of value based around finely-honed functions, designs, and performance features developed in Japan, and their associated technologies.

“Made in Japan” products are the driving force behind this strategy because they are highly regarded for their high quality, performance, and functionality.

However, overseas markets with different living practices and cultures cannot be satisfied by building products that are all the same as those in Japan. In the case of refrigerators, for example, there is a need to develop products that take account of differences in culture and living infrastructure, such as markets that do not have established supply and distribution chains for products such as fresh or frozen foods; or the need to provide storage space in places where people eat a lot of vegetables. Rather than offering the same standardized products throughout the world, Hitachi develops products that are tailored to accurately reflect



Fig. 6—Lifestyle Survey in Viet Nam and Indonesia. Researchers visited the homes of consumers to survey how they live and how they use appliances.

the circumstances in each market while still retaining the same core technologies.

Since the awareness of regional living practices and cultures is an important part of achieving this, there is a need to understand how the people in each country actually live and use their home appliances. And since seeing and hearing for oneself is the best way to determine the actual situation, Hitachi has been conducting consumer research in various countries and regions since 1996. Last year, this included a survey of living practices among upper-middle class and wealthy people in Viet Nam and Indonesia, categories that are growing in size (see Fig. 6).

Hitachi also keeps track of changes by regularly surveying attitudes, such as what people see as important when purchasing a product and what they are dissatisfied with, to identify and compare consumer needs in different countries. The aim of these activities is to improve product development.

In another example, a quantitative survey of washing machine use was conducted in Thailand, Malaysia, and Viet Nam to determine how people really use washing machine operating panels, which are full of buttons for different functions. Hitachi uses the results of surveys like this to try and develop washing machines that anyone can use without getting confused (see Fig. 7).

In the case of side-by-side refrigerators^(a), it is common practice for non-Japanese manufacturers to use a direct connection to the water mains to obtain water for making ice. With regions where it is not safe to drink the water in mind, Hitachi has received widespread positive feedback from consumers for



Fig. 7—Operating Panel of Washing Machine Developed Based on Survey Results.

The operating panel was designed with consideration for layout and appearance, keeping the operation simple by only displaying as much information as needed.

developing a new type of refrigerator with an ice dispenser that works from its own water tank, as in Japanese refrigerators. When conducting a survey of actual living practices, Hitachi became aware of an owner of a conventional side-by-side refrigerator who had gone to all the trouble of connecting a large “gallon” water tank with its own pump to the refrigerator because it was not safe to use the mains water (see Fig. 8). Adopting a design with a built-in tank solves this problem.

International trends toward tighter energy conservation regulations and new standards are also intensifying competition over energy consumption, with changes also taking place in consumer attitudes. In response, Hitachi is achieving top-class energy

(a) Side-by-side refrigerator

A two-door refrigerator with doors that open to the left and right. It is called a side-by-side refrigerator because it has a freezer compartment on one side and a refrigerator on the other.

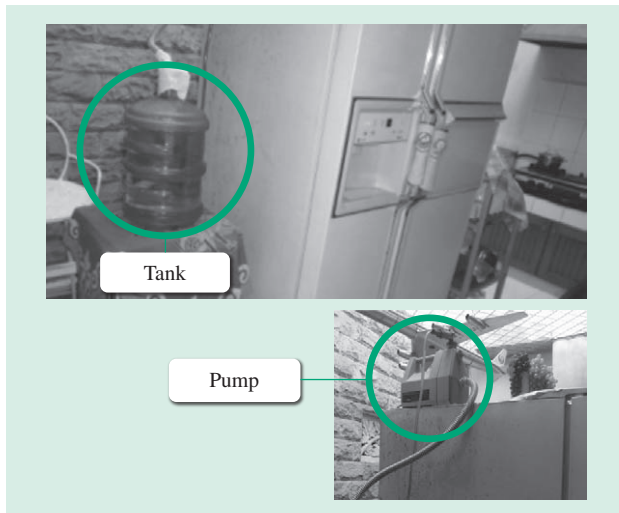


Fig. 8—Actual Refrigerator Use.
Because tap water is unsafe, a separate tank and pump have been fitted to provide water for making ice.

efficiency by developing unique energy-saving technologies.

The following sections summarize the articles in this issue of *Hitachi Review*, which describes what Hitachi is doing to pursue value for consumers, including the development of products that can keep up with changes in consumer living practices and that are designed to suit countries with different needs.

Refrigerator

With an increasingly aging population making people more aware of health concerns, there is growing demand from all generations, not just the elderly, for ways of keeping vegetables fresh.

This article describes how Hitachi has improved the ability of its FY2014 models to keep vegetables fresh by developing a photocatalyst preservation for the vegetable compartment^(b) that uses photocatalyst preservation technology based on a vacuum compartment^(c). The article also describes technologies for making products more energy-efficient and easier to use.

(b) Photocatalyst preservation for vegetable compartment

This function increases the concentration of carbon dioxide gas in the chamber by using an LED and photocatalyst to generate carbon dioxide from the ethylene gas released by vegetables. This is in addition to the carbon dioxide released by vegetable respiration. The higher concentration inhibits vegetable respiration, which is like putting the vegetables to sleep, keeping them fresh by slowing the rate at which they lose nutrients and dry out.

(c) Vacuum compartment

The term “vacuum” is used here to indicate a pressure below atmospheric pressure. Keeping the chiller compartment at about 0.8 atmospheres reduces the amount of oxygen around the food, suppressing oxidation, and slowing the rate at which food loses nutrients and changes color.

Top-loading Washer-dryer

There is strong demand for washing machines with a large capacity to enable an entire load of wash to be done at once, and to allow the washing of large items. Also, as consumers get older, they want washing machines that are easier to load and unload, and that are easier to operate.

An article describes the top-loading washer dryer, a washing machine with a large 10-kg capacity developed to meet these needs that features a high flow rate circulation wash^(d) function for achieving a high level of washing performance while also saving water.

Room Air Conditioner

The “Imaging camera”, which uses a camera to detect people’s movements and control the flow of air accordingly, was developed in FY2012 with the aim of combining comfort and energy savings. The FY2014 models are fitted with the multi-monitoring system, which captures the temperature surrounding people and the layout of rooms and furniture as well as people. An article describes the detection and air flow control techniques used in the multi-monitoring system together with core energy-saving technologies.

Cyclonic Cleaner

By developing its own small and lightweight high-performance motors and a new dust collection design, Hitachi has created a high-power cyclone vacuum cleaner for its FY2014 range that achieves a suction power of 400 W despite its small size. This article describes these features together with the dust ejection mechanism and head, which feature improved ease of use.

Microwave Oven

What consumers want in microwave ovens is that they are healthy, suitable for small households, and provide faster cooking times. To satisfy these demands, Hitachi provides a full range of features that include healthy options such as oil-free stir-fry, low-oxygen cooking to minimize the oxidation of food, and meals that use fermented food; meals that can be prepared for just one or two people; and meals that are ready in just 10 minutes.

(d) High flow rate circulation wash

A function for minimizing uneven washing and ensuring that clothes are washed thoroughly by using a wide-angle spray with a very high 45 L/min flow rate to get the liquid detergent to permeate all through the clothes, and by using fins with a specially designed shape. The function is able to combine a high flow rate with low water use by using a circulation pump to save water.

The bakery function, meanwhile, satisfies the requirements for healthy eating and shorter cooking time with features that include a healthy bread-making function that kneads health-enhancing ingredients into the dough, and reduces the cooking time for a loaf of bread down to only 90 minutes.

Development of Products in Response to Changing Lifestyles

To keep pace with changes in the demographics of demand in Japan (aging population, fewer people per household), Hitachi has developed a rice cooker that is good at cooking small quantities of rice. By taking a global perspective to identifying consumer needs, Hitachi has also developed an air purifier that features a high level of dust removal performance (high flow rate).

Development of Appliances for All-electric Home and Residential Photovoltaic Power Generation Systems

Hitachi has incorporated its grill pan for easier grill cleaning into its induction heating (IH) elements for cooking. Energy-saving performance is the key feature of the natural refrigerant heat-pump water heater, and Hitachi has further improved this by insulating the storage unit with urethane foam. For its home photovoltaic power generation systems, Hitachi has developed an efficient high-output power conditioner that uses unique control techniques.

LED Ceiling Lights for Home Use

Hitachi has based the development of light emitting diode (LED) ceiling lights on the concept of combining brightness with energy savings. For FY2014 models, it has developed easy viewing function^(e) lights that help the elderly see more clearly. This article describes these products along with light guiding ring type LED ceiling lights that use unique light guiding technology.

Global Deployment of Home Appliances to International Markets

Hitachi is implementing its premium strategy with a focus on the fast-growing economies in Asia and the Middle East by developing products with high added value that feature a high level of energy-saving

(e) Easy viewing function

This function uses LEDs that simulate the color of daylight and light bulbs, and that have a brightness that has been boosted by approximately 1.2 times. It achieves brighter natural lighting that is closer to sunlight by using these LEDs and by adding blue-green light. The function improves the light quality and makes it easier to read small print by controlling the light components as well as color and brightness.

performance, high-quality design, and unique functions.

This article describes the export strategy that forms part of this premium strategy, and also an example of development undertaken at an overseas production facility (in Thailand).

Development of Inverter Air Conditioner for Southeast Asia

The proportion of homes with room air conditioners in bedrooms is high in Southeast Asia where economic growth remains strong. This article describes the development of an air conditioner that uses the sleep support function, which is designed to provide comfortable air conditioning in bedrooms.

“Monozukuri” Technology for Home Appliances

Manufacturing technology underpins a high level of basic performance and distinctive added functions. An article describes examples of manufacturing that utilize technology for electric motors and inverters, cell manufacturing, and three-dimensional (3D) printers.

AIMING TO DELIVER “EMPATHETIC VALUE”

This article has shown how Hitachi is striving to develop products with high added value that seek to meet consumer needs by providing a high level of energy-saving performance achieved through unique technologies and that seek to deliver “empathetic value” that satisfies consumers in Japan and elsewhere.

In the future, Hitachi intends to be a pioneer for the future of home appliances by boldly taking up the challenge of developing products with new concepts that meet consumer needs.

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