

## Design Development in Response to the Premium Strategy

*OVERVIEW: In response to the premium strategy advocated by Hitachi Appliances, Inc., the Design Division continuously develops its home appliance designs while combining excellent ease-of-use with high-quality exterior design as its everyday tools. This article focuses in on the development of a glass material that has been highly praised in the market, having been launched as an industry-leading design symbolizing this premium strategy.*

### INTRODUCTION

IN terms of home appliances, the Design Division works with the Simple & Stylish/Usability & Universal/Basic & Belief (SUB) design concept (see Fig. 1) while designing premium products based on consumer lifestyles, combining thoroughly-designed ease-of-use with high-quality exterior appearance to an advanced degree, all while maintaining harmony with the installation location and not being too pretentious.

### EASE OF USE AND HIGH-QUALITY EXTERIOR APPEARANCE

The Design Division cooperates with Hitachi Appliances, Inc. by visiting consumer homes to research how home appliances are being used in real life, by continuously conducting lifestyle surveys.

With respect to the aforementioned ease-of-use guideline, these surveys are used to discover latent problem areas that the consumer is not generally consciously aware of, so the ideas that are produced can be used in the pursuit of designs that are easy to use. A simple mock-up is created, and the utility of the new idea is repeatedly verified along with the parties relevant to development as an easier-to-use product design is sought (see Fig. 2).

With respect to the high-quality exterior appearance guideline, the Design Division focuses on designs based on Color/Material/Finish (CMF), which is predicated on excellent user-friendliness and cleanability, encourages simple and beautiful forms that achieve a harmony with the increasingly high-quality home interiors of recent years, and strongly expresses the product's appeal in the store. In particular, the Design Division is working to continuously advance cross-sectional projects as an

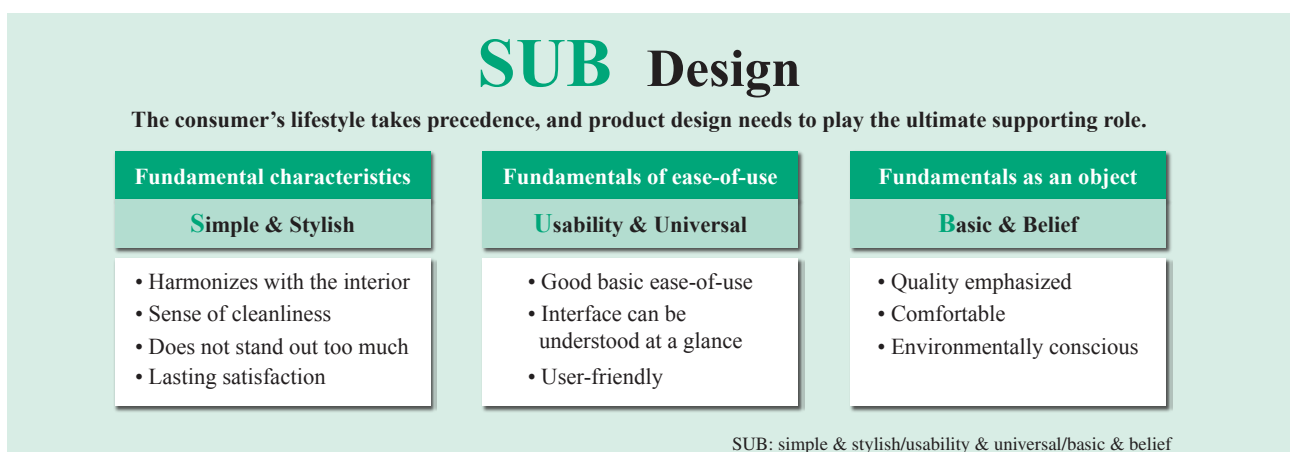


Fig. 1—Simple & Stylish/Usability & Universal/Basic & Belief Design Concept.

Both ease of use and a high-quality exterior appearance are achieved at the same time based on the Simple & Stylish/Usability & Universal/Basic & Belief concept.



*Fig. 2—Verification Using Simple Mock-up.*  
A simple refrigerator mock-up was prepared at full size, and actual usage scenarios were envisioned as ideas were verified.

organization in developing shared elements of CMF, and interface designs.

This article focuses on the development of CMF for achieving attractive product design, and describes the design of a home appliance in response to the premium strategy, centering on the example of a refrigerator.

### CMF DOMINANT DESIGN

Not only does CMF strongly appeal to individual tastes, it also makes it easy to execute a unique design strategy that symbolizes a sense of class, like the luster on a piano. Based on information attained from monitor surveys and other sources in the past, CMF tends to be easier to differentiate for people who are not specialists than shapes are. It is for this reason that the Design Division focuses on CMF dominant design.

### FOCUSING ON GLASS MATERIAL

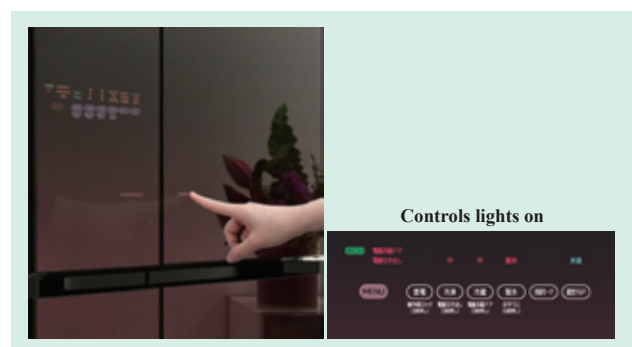
Glass is a material that is commonly seen throughout the home, and is characterized by smoothness and a transparent sense of depth. A reinforcing process can be applied to give glass a surface hardness that is

three times stronger than normal. Smooth, reinforced glass that has had its surface hardness increased is difficult to scratch during ordinary day-to-day usage and is easy to wipe clean, making it highly functional as a surface material for use in home appliances.

A wide variety of different decorative expressions are possible that take advantage of this transparent sense of depth and smoothness, making glass a design material that can be worked into designs that project a sense of class. Also, when international markets are considered, it is clear that home appliances that use glass have already started to spread.

From this perspective of a material that combines both functionality and designability, and representing the iconic expression of CMF that propels design based on this premium strategy, a premium refrigerator that incorporates reinforced glass was released as a domestic product in 2008 for the first time.

Cleanability and designability were then improved further, with a completely smooth control panel combining capacitance switches and light-emitting diode (LED) display, a function to turn off the control panel and display when not in use, and other innovations (see Fig. 3).



*Fig. 3—Smoothing of Control Components.*  
A combination of capacitance switches and a light-emitting diode (LED) display provide both a simple exterior appearance and cleanability. The controls are hidden when not in use.



Fig. 4—Decorative Refrigerator Expressions. A mirror-like texture was reproduced through metal deposition (left). Film gravure printing was also used to add gradation (right).

The decorative expression of these refrigerators starts with colors that have been given a sense of depth through reverse silkscreen printing, followed by mirror expressions using metal deposition and gradation expressions using film gravure printing. The sense of quality has been improved with a variety of industry-leading techniques, year after year (see Fig. 4).

Through these efforts, the glass door design of these refrigerators has been mentioned as a reason for purchasing that is second only to the unique Hitachi function of vacuum compartment among Hitachi appeal points (see Fig. 5).

### STRATEGIC COLOR PLANNING

To provide consumers with options that suit their preferences when they purchase premium refrigerators with glass doors, first two and then three colors were made available after the 2008 release. Since colors strongly reflect individual preferences,

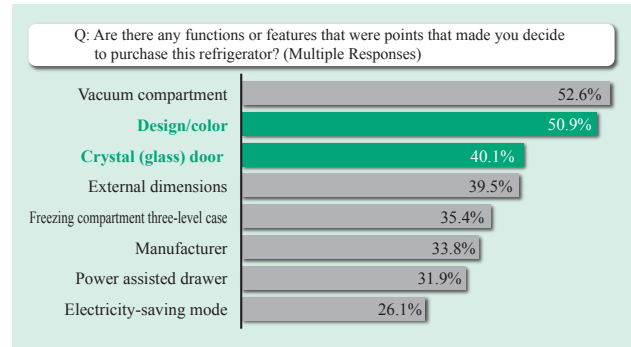


Fig. 5—Deciding Factors when Purchasing a Refrigerator (Multiple Responses) (Hitachi Survey from March 2014: n=350, Purchasers of Hitachi Refrigerators Released in FY2013 [M/G/S Series]).

The design, color, and glass door are appealing points for Hitachi, and are deciding factors that are second only to its unique function of vacuum compartment.

they are often thought to be selected in an arbitrary or sensory fashion. At the Design Division, however, colors are strategically designed based on harmony with the installation environments and with market appeal according to the results of surveys and analyses (see Fig. 6).

As a part of these surveys, the Design Division has been performing fixed-point observations on the interiors of newly constructed condominiums since 2005. Approximately 300 properties in urban areas have been extracted from the Web, categorized by style, and investigated for the differences in materials



Fig. 6—Color Considerations. Factors such as trends in interiors and market appeal were considered.

and colors that determine each property’s impression. At the same time, based on the fact that printing technology is being used for the decorative material, quantitative trends are also tracked, such as the type of sheet material used in building materials, printed steel sheet patterns, and color component ratios. Furthermore, the analysis of point-of-sale (POS) data are used to verify factors such as the colors that are selling well in the industry (including other companies), and ratio differences based on combinations of color expressions, with the results

being used to determine final color variations.

After this analysis, the 2014 model used a champagne color because it harmonizes with the bright oak colors that appear at a high rate as the main construction material for interiors, and both brown and magnolia were added to the lineup as colors that match well with the dark color of walnut materials that appear at the second highest rate (see Fig. 7). In this way, harmony with interiors and appeal in the store were both achieved at the same time.



*Fig. 7—Examples of Refrigerator Color Variations Available in FY2014 Models. Exterior appearances with a champagne color that matches bright oak interiors (top) and a magnolia color that matches dark walnut interiors (bottom) are shown.*

## CMF PRODUCT DEPLOYMENT

Starting in 2014, the know-how cultivated from refrigerators has been applied to CMF designs based

on glass materials in other product genres as well.

First, in the case of the high-end Beat Wash top-loading washer dryer (BW-D10XTV), glass material was used for the lid of the loading opening (see



*Fig. 8—Washer Dryer (BW-D10XTV) with Glass Lid.*

*Along with the improved cleanability, a damper mechanism was also developed based on considerations of user-friendliness when opening and closing the lid (bottom left). A sense of class is also projected through the adoption of a glass lid to which a gradation process has been applied (bottom right).*

Fig. 8, top). The lifestyle surveys conducted in 2012 revealed that detergent and other grime that sticks to the area around the lid on the loading opening is a potential point of complaint for consumers. For this reason, the previous plastic lid that folded in two was changed to a single sheet of glass, and the shapes of the hinges supporting that glass and back piece were changed to shapes that make grime less likely to stick while making it easier to wipe any grime off, thereby enabling easier daily cleaning. Since the new glass lid is heavier than the previous plastic lid, Hitachi Research Laboratory and the Design Division of Taga Works cooperated on designing a new damper mechanism that improves the user-friendliness of opening and closing the lid (see Fig. 8, bottom left). The glass is decorated in such a way that the color gradually darkens towards the back in a gradation

process, and this gives the high-end model a sense of class (see Fig. 8, bottom right).

The application of glass material is not limited to the domestic Japanese market, however. Hitachi Consumer Products (Thailand) also adopted it for use in its top-loading washing machine (SF-160XTV), which it manufactures for sale in international markets. The transparency of glass is taken advantage of in this model, whereby control buttons and display items that are not often used are covered by the glass lid so the user can usually just look through a small window to see the remaining wash time and other information that is limited to the current operating state. In this way, the necessary information is displayed while control components that tend to be confusing are reorganized into a simple, easy-to-see design (see Fig. 9).



Fig. 9—Washing Machine (SF-160XTV) for the International Market.

The transparency of the glass lid is used to show just the minimal number of buttons and displays on the control/display.

Glass material is also used in the air purifier (EP-KVG900). Air purifiers are kept indoors and clean dirty air all year long, so key design points include ensuring that the device is kept both visually and functionally clean. This model uses a single easy-to-clean glass panel for the front along with

capacitance switches, in a design that does not show control buttons or displays when it is not in use. The flat and simple characteristic of the glass is used in a simple design that harmonizes with interiors, while at the same time being easy to clean and maintain on a daily basis (see Fig. 10).



Fig. 10—Global Model Air Purifier (EP-KVG900).

Glass was chosen for use in the front panel. Glass is also used for control and display components that tend to be busy appearance, which in this model are hidden when not in use, providing an interior-friendly feel as well as cleanability.

## CONCLUSIONS

Since our glass material was first applied to a premium refrigerator released in FY2008, it has been used in the development of CMF and refined year after year. Its usage was then deepened and used for a wider range of products, and deployed globally as well.

Decorative methods, color deployments, control design, and other features are arranged according to each product's characteristics, but ease of use and high-quality exterior appearance must both be realized regardless of the country, and attractive values are expressed through design.

The Design Division will continue to support Hitachi Appliances in its premium strategy from the perspective of design through the creation of products that thoroughly exhibit ease-of-use as everyday tools, while pursuing technologies to achieve even higher quality decorations and developing highly convenient user interfaces.

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