

Selected Article

HORIBA Product Design of Today and Future

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Product design is just as important as technology that achieves products' target performance and functionality, when developing a product. This report introduces HORIBA product design team's works and activities in the process of designing new products. First, we will explain "What HORIBA design aims at", and then "Our approaches and outputs with Omoi, the thought that we want to express through the product design".

Introduction

Most of the products of HORIBA Group Companies worldwide are being designed by A-design 21, a team which belongs to R&D Center. There is a good reason why the design team is a part of the R&D Center, which is a fundamental research division. HORIBA considers that the role of the design team is not limited to the immediate outcome of competitive product design. The design team is also expected to conduct design research to contribute to the long-term product development of HORIBA group. So R&D Center is the best arena for product design team to develop concepts and skills for future product design.

We are striving for not only improving the design quality of the individual products but also creating a unified design identity for total products of HORIBA Group in order to inspire our customers' confidence.

What HORIBA Design Aims at

Most products of HORIBA group are analytical instruments used by companies, universities, research organizations and medical institutions. They are so-called business-to-business (B2B) products. In the conventional analytical business field, high performance and competitive price have been most emphasized and appreciated. Thus the aesthetic design and usability have not been thought as a key factor to motivate consumers to purchase. However, it is commonly seen in all business fields that, when a market matures, it becomes more and more difficult to differentiate a product only by

performance and price. In order to promote our products, we need to present a solution for customers' problems with outstanding usability. Sometimes the customers may not have even noticed the problems until we find them through observation. Many of those can be solved by our design-based proposals.

Being B2B products, well-considered design, especially with solutions for the problems found while using the products at the actual site, is becoming more and more important. That's the way to become the top brand that can take initiative in the business field.

Furthermore, we believe what a customer wants to buy is not only a reliable product with aesthetic design and high usability. The customer also asks for HORIBA Brand which is represented by our "Omoi" or "passion and persistence as a manufacturer". We are trying to convey "HORIBA-rashisa" or HORIBA's corporate identity through the design of HORIBA group products, in addition to providing customers with technical advantages.

Kyoto, where HORIBA was born and headquartered, has been known for its climate that people are sensitive with genuine articles. The key reason why HORIBA has been able to continue and expand the business as a manufacturer for over half a century is that we keep producing genuine articles. This effort has created HORIBA fans who love HORIBA brand and regularly buy our products.

We, A-design21, are aiming at "the product design that inspires the confidence in our customer's mind". We think that the confidence is something that is built up

while a customer is using the product repetitively with a certain degree of satisfaction. Gaining customers' confidence is our top priority. Our design is, by no means, designers' self-satisfaction.

Outstanding performance and functionality supported by technical superiority are essential for analytical instruments. On the other hand, usability and aesthetic design are no less important to clearly and precisely show the product value to customers. Well-considered design and engineering, if not fancy, is strongly required.

The "Omoi", or our thought, that we put into the design counts both before and after the purchase. It stimulates customers' purchase motivation and develops into customers' confidence while using it. The design based on customers' viewpoints is called "experience design". "Experience design" presents comfort and priceless experience during repetitive use. We assume customers' confidence is the very thing to make customers say our most favorite phrases; "I'll buy a HORIBA product again." or "I'll recommend HORIBA product to my friends."

The products of HORIBA group ranges widely. We have four business segments; Automotive Test Systems, Analytical Systems, Medical Electronic Systems and Semiconductor Instruments & Systems. The operational environment and conditions differ greatly among the business segments and from customer to customer. As the product design team which covers all the HORIBA products, we are working very hard to understand the operational situation of individual models in order to propose a design with maximum customer satisfaction.

Our Approaches and Outputs

In the following paragraphs, we describe, using some examples, what kind of design should inspire customers' confidence in HORIBA brand, and how we approach to the design.

"Omoi", our thought that we put into design; Glucose Analyzer "Antsense ROSE"

The design concepts of our new glucose analyzer "Antsense ROSE" (Figure 1) are "new experience, friendliness and relief", which rhyme in Japanese.

To present new experience, we designed an innovative way of sampling blood that remarkably reduces the risk of infection. Details are described below.

To demonstrate friendliness, we use smooth and gently curved surface that is associated with friendly relationship between patients and nursing staff. It is a point of care testing (POCT) product used by nursing staff at bedside.

As for relief, we believe a patient feels the greatest relief when the nursing staff is most comfortable in using it. To ensure user-friendly operation, we adopted the graphic user interface (GUI) which was designed by a designer with a career of medical technologist. As a result, the usability especially in sampling and measuring has been greatly increased as we intended.

The product designer with a strong sense of responsibility participated in the product development process right from the start and extracted the points to be improved while using the conventional model. She proposed an innovative way of sampling blood and designed an original disposable chip-filter which is directly inserted into the analyzer.

Avoiding the cross infection can make the nursing staff relief when they measure. We believe this is the design approach from the users' viewpoint, which derives from close examination of how the analyzer is used.

In addition to the product design of the analyzer and the interface, we created the graphics on the carton boxes of the product and consumables, so that all the items related to "Antsense ROSE" bear unified design. It's the carton boxes that give a good first impression to customers when delivered. Using the unified concept, we also designed the cover and graphics of the reference manual, which is referred to on daily basis. We believe that by keeping the same designing motif, the customers' confidence to the HORIBA brand will be generated and grown. "Antsense ROSE" won The Good Design Award 2009. (<http://www.g-mark.org/award/detail.html?id=35617&lang=en>.)



Figure 1 Glucose Analyzer "Antsense ROSE"

NOTE: The Good Design Award is one of the most prestigious awards for product design in Japan, organized by Japan Industrial Design Promotion Organization.

Judges' comment: The design of this new glucose analyzer is simple but ergonomic. The disposable sampling chip stick is ideal to prevent infection and the pre-installed bar-code reader enables easy electrical management of the measurement data for both staff and patients at either inside or outside the device.

What we change and what we remain unchanged; Explosion proof gas analyzer

When remodeling a product, we carefully examine “What should be changed” to express our innovative spirit and “What should remain unchanged” to maintain our customers' long-lasting confidence and reliability. Industrial instruments, represented by the explosion proof gas analyzer (Figure 2), are long-loved products of HORIBA brand. So, we try our best to satisfy our customers' high expectation derived from the “established reliability” in the current operational environment as well as potential needs from new customers with totally new applications.

Cite the recent model change of our explosion proof gas analyzer series as an example. As innovative proposals, we designed new operating interfaces and indicators that are easy to understand and operate. And to increase visual appeal, we used our corporate color [Symbolic Blue] that symbolizes “trustworthy HORIBA brand” and a curved surface [Dynamic Curve] to express “HORIBA Spirit inherent in our products”.



Figure 2 Explosion proof gas analyzer 51 series

As an unchanged point, because long-term robustness is required for this analyzer, a solid aluminum casting housing is continued to be used, while its outlook and interface is refined. In addition, the new model is perfectly replaceable for the convenience of existing customers who have been using the previous model.

Design that addresses potential needs found in the field; Multi-parameter Water Quality Checker U-50

When designing a new product, we need to have clear images of how, by whom, and where it will be used. At the beginning of product designing process, we always collect various kinds of information and carefully analyze them. But the information sometimes unintentionally biased or filtered during the course of collection. So we believe it is important for designers to visit the sites themselves, observe the way the current or equivalent models are used and get customers' feedback. But that's not enough because what we have obtained this way is within the framework of existing models. Our design should go beyond this. We need to consider potential needs that even the customers or our sales staff haven't realized yet. We need to have originality that surprises our customers in order to enhance the HORIBA brand value.

Most of the epoch-making goods are created when potential needs are discovered and unique solutions are proposed. Only the products that exceed customers' expectation can sweep over the market. Typical examples are “Cup Noodle”¹, a convenience food, and iPod², the portable digital audio system.

We, A-design21, have collaborated with Dr. Katsuhiko Kushi, professor at Kyoto Institute of Technology and his laboratory members in the research on product design. Through video ethnography and user-observation, we have extracted the potential needs of the users. We will explain the process using the case of multi-water checker U-50 (Figure 3).

U-50 is a portable multi-parameter water checker, which measures water quality of rivers, lakes, subsurface water, waste water and so on. It consists of a display unit and a sensor probe, being connected with a sensor cable. As a strong point of the product, the maximum length of the



Figure 3 Multi water quality checker U-50



Figure 4 On-site observation scenery
 (a) How is the handiness of the long sensor cable?
 (b) The casters are unworkable in the tussock

cable is extended to 30 meters so that water of that depth or 30 meters down below can be measured. Thus the easy handling of the cable is the key to increase usability at measuring sites. We brought water checkers to a river, actually conducted measurement and video-recorded the scene for analysis. The on-site observation scenery is shown in Figure 4.

We reviewed the video tape, extracted problems and list



Figure 5 Scenery of the brainstorming

the points we noticed. We brainstormed with the R&D engineers and sales staff, agreed with the design concept of “Tough & Easy” and came up with many design ideas. The brainstorming scene is shown in Figure 5. Based on these ideas, we draw design sketches and made rapid prototypings to review and refine the concepts and ideas. Rough sketch is shown in Figure 6. During this process, these design keywords as “easy to handle”, “clear one-handed operation”, and “shock-proof, water-proof, cleaning-less” were created. Then we experimentally produced several preproduction models and examined. After all the process, we reached the final product design with eye-friendly, large-sized liquid crystal display and the easy-to-understand GUI and icons for easy-operation.

We are very happy that U-50 also won “The Good Design Award 2009”. (<http://www.g-mark.org/award/detail.html?sheet=eval&id=35499&lang=en>)

Judges’ comment: The instrument deserves high evaluation for achieving simultaneous measurement of 11 parameters of water, such as river, sea, subsurface water, drainage water and clean water. The combination of the

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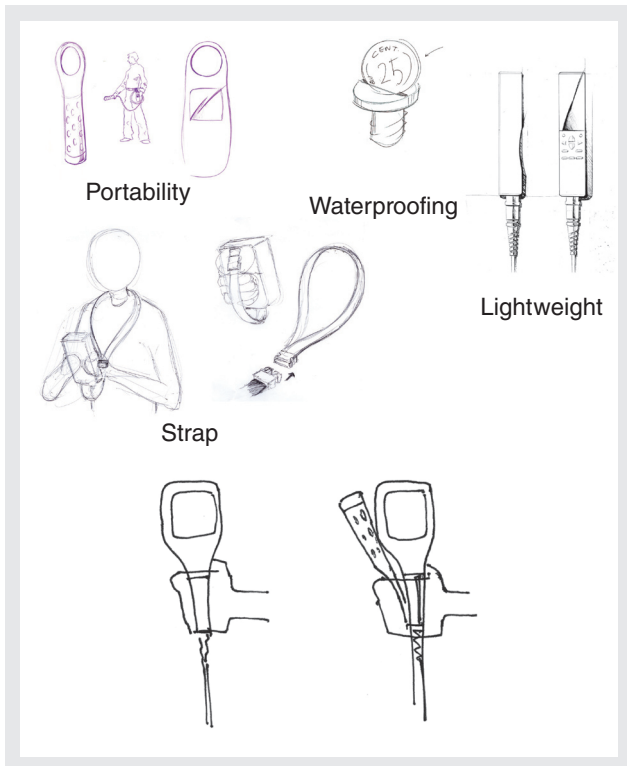


Figure 6 Rough sketches

handy display unit and the throw-in sensor is well-designed. We highly evaluated the design that fulfils the requirements in the field based on the analysis of on-site measurement process.

*1: A registered Trademark of Nissin Foods Holdings Co., Ltd.

*2: A registered Trademark of Apple Inc.

Conclusion

A-design21 has been in charge of the product design for the whole HORIBA group aiming at enhancing the product quality and the brand value. We also inject “Omoi”, our thought, to our products, which highlights the identity of HORIBA products. Even though the Good Design Award was given to the two particular products, it will help strengthening “the confidence in HORIBA brand” for all our product lines.

The role of A-design 21 is three-fold. First is to contribute to our business performance through distinguished “experience design” of individual product. Second is to increase customers’ confidence by “One Company Design”, in other words, “design with unified company identity”. Third is to promote the design research. As the

design section that belongs to R&D center, we will promote the research and study, including processing technology, material, and ergonomics. We are aiming at the design that makes our competitors take their hats off. We will evolve into a design leader of the analytical instrument industry with the design that exceeds the public expectation for this product category.

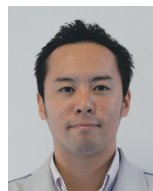
Through playing these three roles, A-design21 will enhance the brand equity.

Analysis is the basis for all scientific technologies. We believe product design can make the analytical technology easier-to-understand to wide range of users, thus we hope we can contribute to the advancement of analytical technology through product design.



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