

Product Development and Technology Deployment in Motorcycle & Engine Business

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Introduction

In developing competing products in the Motorcycle & Engine business, which handles motorcycles and four-wheel vehicles (side-by-side and other off-road vehicles), and PWCs (personal watercrafts) as its core products, Kawasaki is aiming to establish demands, free from price competition, through the creation of brand value quite different from competitors. And it is doing so under the slogan "A Class Apart."

Today, Kawasaki is undergoing a so-called once-in-a-century transformation of transportation devices, amid which, for example, realizing a low-carbon society is required due to increasing demands for environmental regulations, and is working to develop technologies incorporating new technologies, such as electrification, communication, and advanced assistance systems, as well as existing technologies.

For general-purpose engines that are traded business-to-business, Kawasaki has achieved a share of over 50% in the commercial mower market in North America, and has achieved its unique position with the highly reliable brand image that Kawasaki has been developing for a long time.

1 Kawasaki brand

Since 2010, the Motorcycle & Engine Company has been researching brand images with affective engineering. This research revealed that the customers use "Reliability," "Activity," and "Desirability" as psychological scales in their recognition of a brand. With this understanding of the psychological position of each brand on the brand impression map drawn based on these three psychological scales, Kawasaki has set "achieving a higher rank" as its goal. This gave birth to the brand slogan, "A Class Apart," which serves as a policy for our brand value creation.

2 Products free from price competition

Motorcycles are categorized into various types including

the supersport type, which is close to racing models, the naked type, which is a street model with a casual atmosphere, the touring type, which is for enjoying a long ride, and the off-road type, which is for riding through untamed terrain, but customer preferences change every moment. In recent years, with an aging customer base, customers tend to prefer the touring type and classic style, which are more comfortable to ride. Taking this tendency into account, we released the Z900RS (**Fig. 1**) and Z900RS Cafe, which enjoy popularity as products that evoke the brand image at a glance and suit the times. We also released the Ninja H2 SX, which is expensive but enjoys a good reputation from many customers as a product for enjoying high-quality and comfortable touring.

For four-wheel vehicles, we have a brand lineup called MULE, which is used for a very wide range of applications, including workplace patrolling, trail riding, and camping. In particular, the MULE PRO has enjoyed a good reputation for a long time. It is equipped with our unique transformation mechanism that enables the vehicle to be used as both a three-passenger vehicle and a six-passenger vehicle according to the application and has an increased cruising speed (**Fig. 2**).

3 Engine technology

Kawasaki has developed supercharged engines for motorcycles and has been continuously working to improve their performance. For the Ninja H2 SX (**Fig. 3**), we pursued high power, excellent acceleration, and fuel economy, and successfully improved both the running performance and environmental performance. Moreover, we equipped the Ninja H2 SX with traction control, thereby achieving high reliability even for long-distance touring involving staying overnight with heavy loads, riding double, and riding on various road surfaces.

4 Chassis technology

For the Ninja 250 and Ninja 400 (**Fig. 4**), we achieved



Fig. 1 Z900RS



Fig. 2 MULE PRO

 Kawasaki
SUPER Green Product †
2018



Fig. 3 Ninja H2 SX

† The Ninja H2 SX has high power and powerful acceleration which are features of the supercharged models, and at the same time has higher fuel economy than other Kawasaki models that have the same level of power.



Fig. 4 Ninja 400

light riding and significant weight reduction, thereby allowing more customers to enjoy “Fun to Ride” and “Ease of Riding” securely and safely. These models enjoy a good reputation even from first-time motorcycle riders and female riders, leading to the creation of new customer segments.

5 Various analyses supporting added value

One of our efforts to increase customer confidence is introducing the latest analytical technologies for accurate development. Structure, strength, heat, fluid, vibration, sound, and material are analyzed, each of which has a great influence on engine and chassis design. For example, sound is an important factor for motorcycles, from which value is created through the five senses. Creating attractive

sounds contributes to adding value to products, so we have been developing the sounds of intakes, and have recently begun developing the sounds of exhaust systems (Fig. 5).

6 Exterior design

The technologies supporting exterior design include three-dimensional design, computer graphics, virtual reality, and surface treatment. Recently, exterior surface treatment technology has made significant progress, which has made silver mirror painting possible, which offers a metal-like appearance, and paints with a self-repairing function. This has enabled the sense of high-quality to last longer, thereby offering an enhanced feeling of attachment. We developed the technologies necessary to apply these technologies to mass production and have adopted them



Fig. 5 Z900RS Cafe

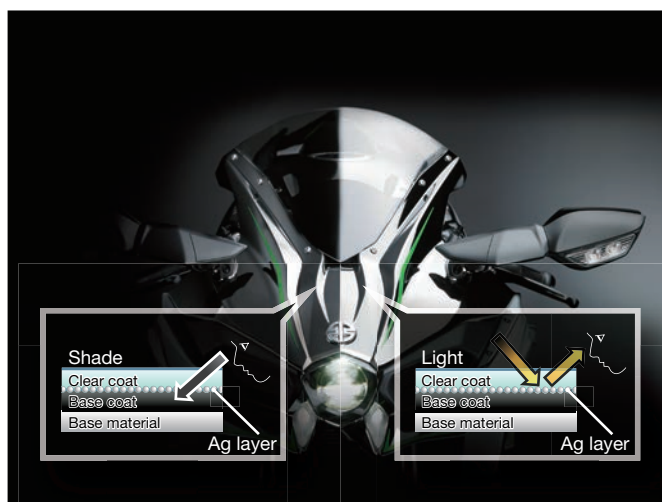


Fig. 6 Silver mirror Paint

for the Ninja H2 and other models (Fig. 6).

7 Efforts to expand brand recognition

(1) Efforts in dealers

In the Japanese market, we are developing Kawasaki brand shops and deploying them throughout the nation. This activity is intended to offer high-level hospitality as well as space that can be enjoyed with the five senses and to promote the creation of brand value free from price competition. The affective engineering we introduced about ten years ago has allowed for brand image integration with the five senses, shop design based on the objective analysis of a high-quality feel, and unique hospitality presentation. This also contributes to product demand creation (Fig. 7).

(2) Efforts in racing

Kawasaki has been participating in the World Superbike Championship (Fig. 8), motocross races in North America and Europe, and other races. Especially in the World Superbike Championship, Kawasaki won its fourth consecutive championship for the first time in its history. This success was the fruit of the technologies developed by our continuous efforts, and was only possible because we worked as a team.

Kawasaki also participated in the Asia Road Racing Championship (Fig. 9). Aside from the aim of winning, the race was also an important opportunity to improve local mechanics' and riders' skills in Asian countries. Moreover, in the new 300cm³ class of the World Supersport Championship, Kawasaki's female rider won the first championship, shining brightly in the male-dominated



Fig. 7 Kawasaki Plaza



Fig. 8 World Superbike Championship



Fig. 9 Asia Road Racing Championship

motorcycle world (Fig. 10). I think that females will be both key customers and professional riders.

8 General-purpose engines

For general-purpose engines, we are doing business mainly in North America. The demand for engines for general households has been stagnant because the main customer base is aging and increasingly tend not to mow grass on their own. However, more people are hiring professionals to mow their grass instead of doing it on their own, boosting sales in the commercial market (market for professional use). Kawasaki is continuously developing reliable products in the commercial market, thereby maintaining a high market share.

In recent years, we are offering products equipped with electronic fuel injection systems, which enjoy a high

reputation in the market (Fig. 11). The commercial market is expected to continue growing and become more competitive. We will strengthen our development system so that we can release optimal products to the market ahead of our competitors.

9 Future technologies

With Kawasaki's cooperate slogans, "realizing a low-carbon society," "realizing a recycling-oriented society," and "symbiotic society," the Motorcycle & Engine Company is working to further reduce fuel consumption, weight, noise, and chemical substances through technological development.

For electrification, advanced assistance, communication, and other technologies, we are maintaining a system that enables cutting-edge technical



Fig. 10 World Superbike Championship 300



Fig. 11 Kawasaki FT730V-EFI

research through not only market competition but also clarification of fields that we research to gain know-how on our own and fields in which we can collaborate with other companies regardless of industry type.

Conclusion

Motorcycles and four-wheel vehicles are globally traded products, and are recognized not only as a useful means of transportation, but also as a hobby. In this rapidly changing

world, with the slogan "KAWA-ru SAKI-e," or "Changing forward" in English, we are developing products prior to competitors that can offer society a secure, safe, new lifestyle are as well as offering "Fun to Ride" and "Ease of Riding."

For general-purpose engines, we will reflect customers' demands in our products so that they continuously mature to make our products more reliable, convenient, and irreplaceable.