

Styling Design of New Crossover VEZEL

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ABSTRACT

The 2014 model VEZEL is a new product, similar to a compact SUV but combining the personal feel of a coupe and the utility of a minivan. The keywords during the development of the VEZEL were “specialty car”, not just a small SUV, because the developers wanted to create a sensual car. The grand concept, therefore, was “Sensual, Crossover.” The concept of the package design was “Smart Cross PKG.” This was embodied by combining the attractive points of SUVs, coupes, and minivans. The concepts of the exterior design and interior design were “Dynamic Cross Solid” and “Expansible Cockpit” respectively. The exterior dynamically combines strength and sultriness, while the high-class interior brings out both spaciousness and a personal feel. Moreover, using the concept of “coordination” for the color material, the designers put together an internal and external design such that each variation was like a new work. By combining utility and “sensuality”, the VEZEL development team did more than just appeal to consumers by being better than competing products in fragmentary ways, such as performance or equipment. Rather, they brought out a product with multifaceted value that consumers would choose based on sensitivity.

1. Introduction

The CR-V, announced in 1995, was a light cross-country vehicle based on a passenger car which was quite unusual for the time. By now it has grown into a global brand with more than 500,000 units sold annually in 160 countries. As such, the CR-V is recognized as the standard of SUVs. As the downsizing trend spread around the world, Honda began developing a new SUV. But rather than simply develop a small CR-V, the development team wanted to create an attractive “real-car” product that would redefine the world concept of the compact standard.

“Specialty car” are the key words that express the “real-car” quality that the development team was thinking of. The PRELUDE (Fig. 1) and ACCORD INSPIRE (Fig. 2) were once very popular cars with beautiful styling and high-quality interiors that gave the driver the leading role. These models offered an attractiveness that clearly differed from the mainstream family sedans of the time. More than just tools for getting around, they supported drivers as a partner, helping them enjoy lives with greater quality and prosperity.

As the times changed, however, the values that consumers sought in their automobiles became more diverse and grew to include spaciousness and ease of use. Products such as these one-time specialty cars no longer resonated with many customers. Honda therefore decided it was necessary to develop products that would combine



Fig. 1 PRELUDE



Fig. 2 ACCORD INSPIRE

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utility (made possible by Honda's unique technologies) with attractiveness that appeals directly to the customer's sensitivity. "Sensual, Crossover" (Fig. 3) is the grand concept that the development team established in its pursuit of a specialty car for a new age, targeting urban dwellers around the world. The standard during development was not just utility, but whether this vehicle was attractive to the customer.



Fig. 3 Grand concept

2. Package Design

2.1. Concept

"Smart Cross PKG" (Fig. 4) was the concept that the development team used in order to combine coupe value and minivan value, built upon a base of SUV values such as a sense of confidence and safety, status, and ease of use. Moreover, the technique for realizing the core SUV values of reliability and sense of confidence was to emphasize three elements (large-diameter tires, a high eye point, and high road clearance) while pursuing a framework as a "sensual" car.

2.2. An SUV-Like View

The SUV value that the development team particularly focused on was the eye point (Fig. 5). The higher the eye point, the more drivers can feel they are looking down on the road and traffic; but if it is too high, the end result gets away from the specialty car image that the team was aiming for. The team therefore verified the eye-point height that would allow an SUV-like view and sense of confidence while keeping the overall height down.

The team compared many vehicles to confirm at what eye-point height drivers would be able to feel a clear difference from ordinary sedans or hatchbacks. As a result, they decided that an eye point 100 mm higher than an ordinary sedan or hatchback was necessary for drivers to recognize a vehicle as an SUV (Fig. 6). Additionally, the

more upright the passenger sits, the stronger the image of a commercial vehicle, but the more reclined the passenger position, the greater the nonvisible length of road in the front. By designing a passenger position close to that of a sedan, the developers were able to provide a suitable personal feel as well as the sense of a good view.

2.3. Coupe Value and Minivan Value

In order to achieve coupe value, the development team created a sporty cockpit space for the driver. They started with the assumption that the vehicle would use a high-deck console, and then they secured the maximum dimensions

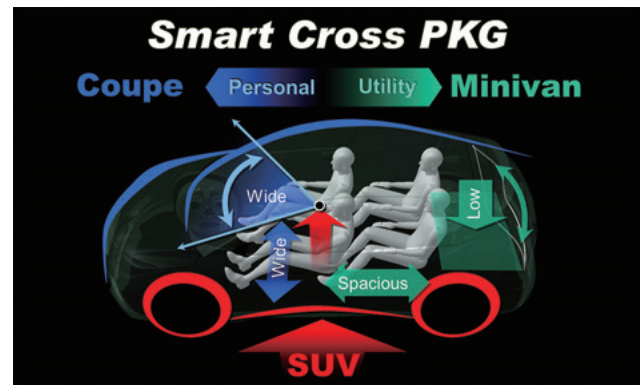


Fig. 4 Package concept

Optimal visibility for driving and ease of entry and exit

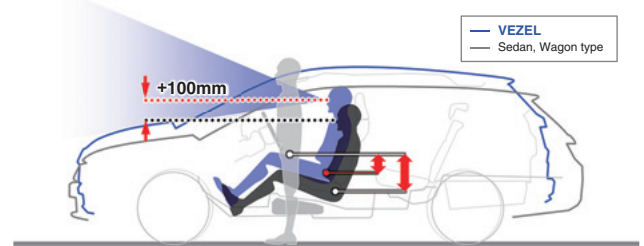


Fig. 5 Eye point of SUV

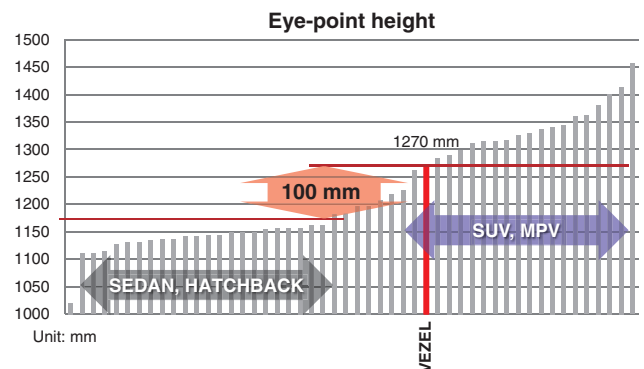


Fig. 6 Eye-point height of SUV and sedan

laterally to give front passengers a personal feel and ample space. They were also adamant about providing a wide front view so that the driver could feel as one with the car and drive safely and enjoyably. To do that, they located the base of the front pillar as far back as possible and made the pillar section narrow (Fig. 7), which enabled them to achieve the targeted front view.

The development team achieved each of two minivan values: spaciousness in the rear seat and an easy-to-use luggage compartment. To do so, the backseat provides 990 mm of legroom which is enough space for adults to cross their legs. They also optimized seat-face length and seat-back angle by using high-end sedans as reference. The focus here was not just spaciousness, but also a sense of relaxation.

The luggage compartment makes it easy to load and unload large objects, since the opening is low and the width of the opening is about the same as the STEP WGN (Fig. 8). Additionally, the low-floor center-tank layout means that the luggage compartment is high enough so that, with the backseat folded down, a mountain bike with its front wheel removed can be loaded into the compartment standing up.

A-pillar section

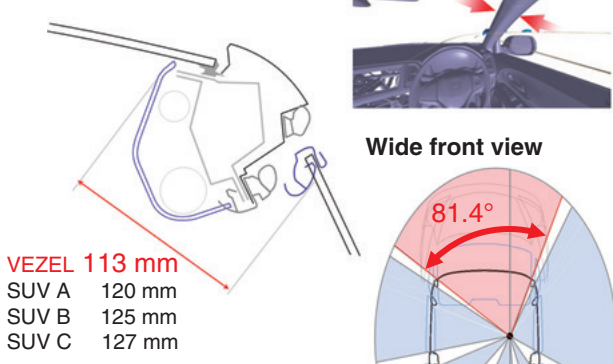


Fig. 7 A-pillar section and wide front view

Usability equivalent to one-class higher SUV

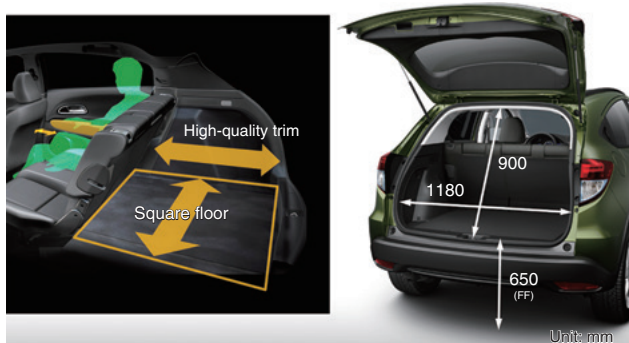


Fig. 8 Rear space

3. Exterior Design

3.1. Concept

“Dynamic Cross Solid” was established as the concept by the development team to help them dynamically combine the strength expected of an SUV with the “sensuality” of a coupe (Fig. 9).

To impart an urban SUV look for a new age, the development team started with the assumption that it would have fewer rugged (uneven surface) elements that invoke the conventional SUV image. Then, a strong front was designed by pulling the front pillar towards the rear and giving the nose a greater sense of volume than in an ordinary sedan. Also, to give straight expression to the real-car attractiveness, the bumper area was modeled to emphasize a sense that the four tires are firmly planted on the ground (Fig. 10).



Fig. 9 Exterior design concept



Fig. 10 Final exterior rendering

Next, the development team endeavored to provide a character line with a long stroke to give a coupe-like feel (Fig. 11). A long character line boldly cruising down the road on a compact body creates a more beautiful impression. The stretching sultriness moreover gives the vehicle a greater presence than one would expect in this body size. In particular, the character line, which starts from the C-pillar, straddles the shoulder, and thrusts all the way to a point in front of the front wheel arch, was carefully analyzed and treated as the point where the design “sensuality” and strength cross over. Additionally, the rear door handle is integrated into the rear tip of the side window (part of the C-pillar) to give the VEZEL the personal look of a two-door car (Fig. 12).

3.2. Aerocabin Offering Great View, Comfort, and Ease of Entry and Exit

SUVs typically encounter more air resistance than sedans because of their greater height. The development team’s target was to build a new-generation SUV with fuel economy similar to that of a sedan. However, a shape that is ideal in terms of fluid mechanics does not necessarily match up with attractive styling. Furthermore, balancing package performance (view and comfort) with fuel economy is also an important element of product development.



Fig. 11 Character line

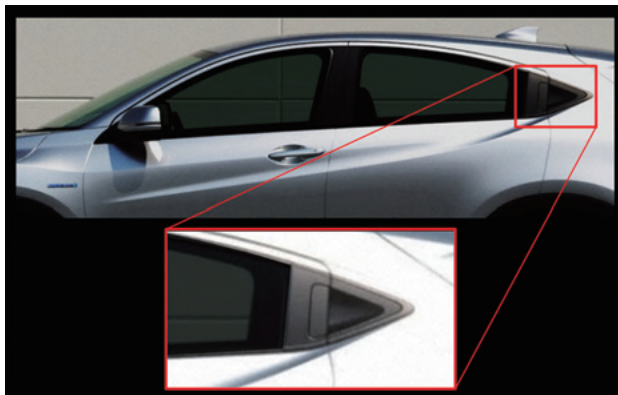


Fig. 12 Rear door handle

Honda’s clay modelers worked to provide a cabin shape close to the fluid dynamics ideal after first satisfying the need for coupe-like styling, view, comfort, and ease of entry and exit. To do this they performed repeated wind tunnel simulation and modeling (Fig. 13). They also consulted not only with exterior designers but also package designers and interior designers to come up with the most complete product possible.

The basis of the cabin modeling was a shape that starts from the strongly curved front window and narrows towards the rear. From the rear seat to the luggage compartment the VEZEL provides rear seat comfort and a good rear view of minivans. Meanwhile, the side window graphics converge sharply at the rear to give a compact, personal impression from the outside.

The pursuit of aerodynamic performance, including below-floor rectification (Fig. 14), resulted in achieving the team’s aerodynamic targets. The VEZEL’s $CD \times A$ (air resistance $\times$ frontal projected area) is in the sedan category.

3.3. Front Face and Lighting Design

The front face expresses a sense of unity between the headlights and grille which conforms to the new Honda face



Fig. 13 Exterior clay model

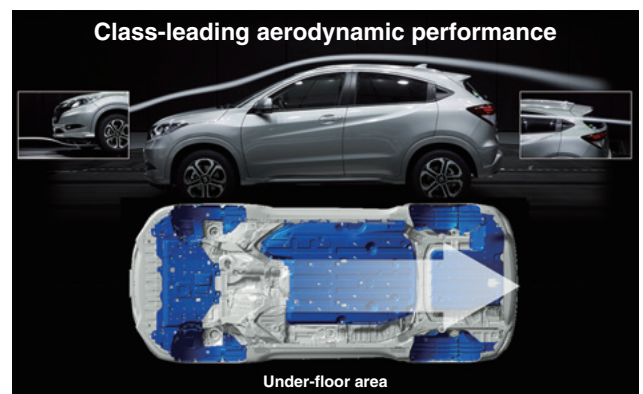


Fig. 14 Aerodynamics

idea called “SOLID WING FACE” (Fig. 15).

The grille of hybrid vehicles uses a new technique that applies a plating-like coating from the back of smoke acrylic resin. Additionally, the development team fastidiously used simple, clean modeling to create an image of pure metal to express SUV-like strength in a high-quality manner. The idea behind the gasoline version similarly used a dark metallic coating on a specially designed grille to evoke strength. Together with the chrome-plated molding this evokes a high-quality look.

The headlight (Fig. 16) evokes sensual strength by bringing out a metallic shine against the overall dark tone of the front. The hybrid version uses a projector-type lamp with two LED lights on each side. The development team strove to make the small, square, luminous body of the LEDs appear to be floating in a deep, dark space. The gasoline version has a black-toned multi-reflector-type headlight, giving the two versions a common identity.

The rear combination lamp (Fig. 16) uses an LED guiding stripe for the hybrid version and direct-type LED lighting for the gasoline version to help ensure that the lights are highly visible and advanced looking.

3.4. Design That Sparkles around the World

The exterior design had to have a tough look. It had



Fig. 15 Front face design

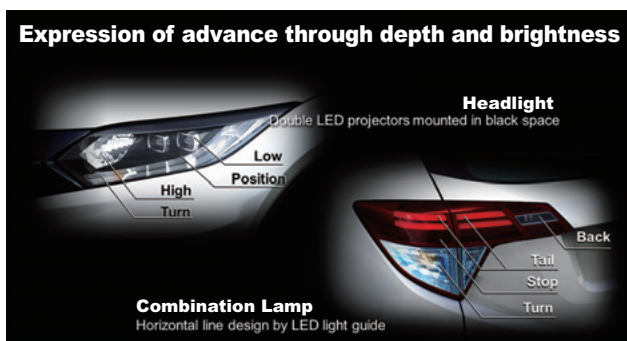


Fig. 16 Lighting design

to look as if it were on a German autobahn, for example, grabbing the road and not budging even if a larger car got close to it.

Japanese cars sometimes appear delicate in other countries. This is because environmental factors in these places, such as the breadth of the roads, the size of surrounding cars, and the quality of light, differ from those in Japan. The development team set about to give the VEZEL strong styling that is competitive enough for world markets (Figs. 17 and 18). Thus, the team parked larger, higher-priced vehicles next to their VEZEL model and proceeded to develop the product to have enough presence and quality to stand up to those competitors. In addition, to finish their strong “sensual” design that could shine no matter where in the world it cruises, the members visited many of the regions where the VEZEL was intended to sell and researched the environments in which it would actually be used. They also advanced the design process by reflecting the necessary elements into the model each time they were discovered.



Fig. 17 Strongly styled front



Fig. 18 Strongly styled rear

4. Interior Design

4.1. Concept

The concept established in the quest to develop a next-generation specialty car was “Expansible Cockpit” (Fig. 19). That expression brings together “expanse”,

referring to a spacious area, with “cockpit”, which evokes an image of a tight, sporty space. The aim of development was to combine these two contradictory values under the keyword “sensual” (Fig. 20).

Once the sense of confidence and ease of use expected from an SUV were achieved, the design task that arose from this concept was how to combine these with the “sensuality” of a coupe. The development team felt that the techniques for expressing all of these characteristics would not lead to high quality if the high-end feel and advanced characteristics of the VEZEL were only on the surface. The team explored a new styling approach based on the essence of the car’s value rather than play the eccentric artist. They additionally worked on the expression of the interior framework and texture so that customers who really knew cars would connect with the VEZEL.

4.2. Initiatives on Interior Framework

4.2.1. Instrument panel

One of the tasks performed in the initial stage of development is molding the instrument panel framework. Up to now, the trend has been to create a refreshing space by making the instrument panel look thin and light. However, customers demand a sense of confidence from SUVs, and giving them a sense of insecurity, such that they feel exposed, is not an acceptable trade-off for a

refreshing feel. The development team judged that it was appropriate to model the instrument panel about 70 mm thicker than in a same-class compact car that they had developed (Fig. 21). This was deemed to be the section necessary to give customers a sense that they are well protected even if cruising at top speed on, for example, a German autobahn. Generally speaking, a thick section gives passengers a strong sense of being pressed in. Therefore, the development team reduced elements like the character line as far as possible to provide a simple surface structure and reduce visual noise. The result is a refreshing feel that the interior is continuous with the outside world. They were also fastidious about the horizontal base tone to help ensure that passengers would be aware of the expansive, rich space. Thus the team minimized vertical elements, for example by getting rid of the center cluster panel (an element that partitions the space vertically) and giving the air conditioner outlet a long horizontal shape (Fig. 22). Due to such steps, the instrument panel appears wider than it actually is.

The result of emphasizing a simple, horizontal look is that the upper surface of the instrument panel, having very little character line, does not reflect very much in the front glass thus giving the driver a good view.

4.2.2. High-deck console

In the interior, the high-deck console is symbolic of the



Fig. 19 Interior design concept

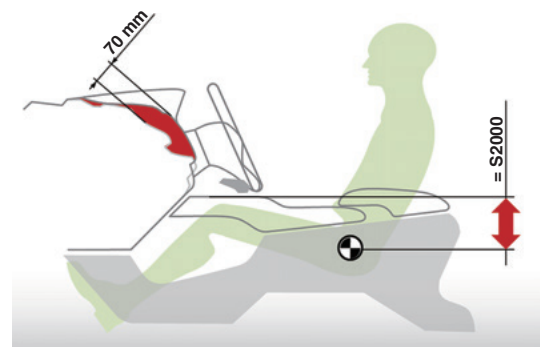


Fig. 21 Sectional view of instrument panel



Fig. 20 Instrument panel



Fig. 22 Passenger-side air outlet

character of the VEZEL (Fig. 23). As early as the initial stage of development, people within Honda had different opinions about using a high-deck console which divides the interior space. The development team, however, felt they could provide the high quality of a coupe that they were aiming for by providing personal areas for both the driver and front-seat passenger, and therefore worked to embody this.

The height of the console was set to be the same as that of the S2000, a sports car representative of Honda passenger standards terms (Fig. 21). This height evokes a sense of separation such as one might have in a business-class seat. The layout also provides the greatest possible couple distance for the body framework in order to give the driver and front passenger a comfortable sense of distance (Fig. 24).

Among European makes, even some compact cars in recent years have begun to use a soft pad on the top of the instrument panel, and this has gradually become an established signal to those with higher-end preferences.

From the customer's point of view, however, the development team felt it was more desirable to have a soft pad on the high-deck console, which is closer to the customer. Some argued that this was excessive, since no other model in this class had used a soft pad on the console. However, the team proceeded on the assumption that it would not use a soft pad on the top of the instrument panel as it had planned. As a result, the console, a large part of which consists of soft padding, created a value and characteristic that the VEZEL could easily convey to the



Fig. 23 High-deck console



Fig. 24 Wide couple distance

customer and further accentuate the personal feel that the team was aiming for.

Personal space was not the only value offered by the high-deck console. This layout also made it possible to use by-wire technology for the parking brake and made the cup holder easier to use. The unique and beautifully curved console design opened up utility space below the shift lever thus helping to achieve new and smart ease of use that had never existed before (Fig. 25).

4.2.3. A quality feel born of inevitability

The instrument panel built for a sense of confidence and the high-deck console designed for a personal feel thus completed the interior framework for embodying the “Expansible Cockpit” concept.

The simple, functional expression that was created by these initiatives and arose from inevitability combines high utility with beauty. This idea was set as the direction for the high quality that the development team was aiming for in the VEZEL interior and also led to the new idea of texture expression described below.

Simply expressing its functionality straightforwardly makes the interior design beautiful and enhances its value. Being too forward with styling and unnatural exaggeration of function is not the equivalent of high quality and can even diminish the value of the product. Although both interior and exterior design are forms of industrial design, interior design is somewhat different from exterior design, which has sculpture-like, pure art elements.

4.3. Initiatives for Expressing New Texture

4.3.1. From gorgeous to sensual

The keyword of texture expression in the VEZEL was “beguiling,” which relates to the grand concept. Wood and metal materials are frequently substituted with plastic. In recent years, coating and film materials have begun to offer higher quality at lower cost, so even some compact cars are decorated to be as gorgeous as high-end cars. Given the world view expected of the VEZEL, however, the development team wanted it to be “sensual” rather

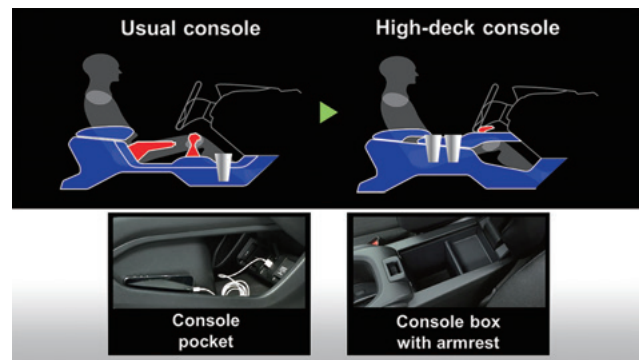


Fig. 25 Console utility

than gorgeous, so it was necessary to explore different techniques of texture expression than had been used before.

Since the model was meant to offer a high degree of utility, it inevitably assumes simple shapes; bringing out high degrees of beauty and quality as was the focus of the initiative to create a new framework as previously described. Thus, the development team believed it should be possible to bring out a “beguiling” expression by pursuing the inevitable in material expression as well. Therefore, they started with the assumption that they would not simulate wood and metal. Instead of decorating with the kinds of texture that have been used up to now, they moved to a new way of thinking: texture expressed by shape.

4.3.2. Three rules of texture expression

Advances in resin molding technology have made it possible to create products in all types of shapes. It is possible to make character lines that resemble leather while looking sharp enough to cut skin, or to create materials that look like metal but have the soft expression of organic matter at the same time. However, not every shape that can be formed necessarily looks like high quality. The development team felt that three inevitabilities (rules) were necessary to embody high-quality “sensuality”. These three rules help reduce inconsistencies and flaws that cause “noise” in the interior space. The team believed that these would certainly be conveyed to the customer as a sense of invisible quality.

The first rule was inevitability in respect to function. One has to select materials that reflect the functionality that the part is intended to have. One has to choose accurately based on whether that part will be viewed, touched, or operated during driving.

The team felt that this should be considered at the sketch stage (Fig. 26). For example, materials that drivers and passengers touch might be smooth and soft; those that are farther away might be dry and non-glossy; information displays and parts that are operated might be hard to the touch and designed to feel very precise. Therefore the team

set many material samples next to their sketch work and correlated functions to the tactile impression each material actually gave. Along with this they created a simple and dynamic expression with as few lines as possible.

The second rule was inevitability in respect to materials. This rule means that expression should follow the material that one expects to use. For example, if starting with the assumption that a leather expression is appropriate, one should follow the characteristics of leather even if the part is made of molded plastic. The team felt that this should be considered at the clay model stage (Fig. 27). In this case, most of the design consisted of large surfaces. Thus the clay modelers had to use a new modeling technique for those parts where a character line could not fool the eye. So in order to fashion high-quality surfaces that are simple but not dreary, the modelers started by understanding the characteristics of the material, determined how they could be expressed in delicate and dynamic ways, and reproduced these in the clay model. Additionally, for those parts where molding was to be used to create a sewn look, they analyzed and quantified the subtle tension in leather that has been stitched through with thread and reflected this in the clay model.

The third rule was inevitability in respect to manufacture. A product’s styling motif has to be consistent with the way it is manufactured. As manufacturing conditions may cause the motif to be disrupted, developers have to evolve a motif that is in keeping with how the product is manufactured. This is the attitude that designers take to their work. It reflects their ability to be flexible according to changes in conditions that happen during the development process. In the process of working with the design department, the development team encountered a number of unexpected situations. However, they had decided that instead of sticking stubbornly to the form they had previously chosen, they would take these unexpected situations as good opportunities for further creation. Each time conditions changed because of unexpected situations, the development team evolved their design by discussing and understanding the validity of these changes and turning them into new ideas (Fig. 28).



Fig. 26 Concept sketch



Fig. 27 Interior clay model



Fig. 28 Final interior rendering

Through this thorough pursuit of inevitability, from large surfaces to small details and even the very attitude of the design initiatives, the team developed an expression that exudes “sensuality” instead of depending on decoration.

In this manner, by developing a new interior framework and new texture expression, the team completed an interior that is personal, usable, simple, and “sensual.”

5. Color and Material

5.1. Concept

“COORDINATION” was chosen as the concept to express the idea of combining body and interior colors in the same way that people do with their fashion (Fig. 29). Instead of developing the body and interior colors separately, the development team expressed their world view that the interior and exterior of the car should be an integrated unit. In this manner they completed the “sensual” expression.

The body color expresses the toughness of an SUV and the bewitching look of a coupe while conscientiously appealing to the sultriness of an adult. The interior color expresses a high-quality, vivid space that is exhilarating to customers riding inside. Additionally, the body and interior colors were designed around three keywords – Mode, Cool,



Fig. 29 Color concept

and Elegance – and were completed to reflect each of those world views (Fig. 30).

The Mode color scheme, targeted at independent adult females, suggests a sparkling black world that is both alluring and strong. The bewitching purplish gray body and the contrast of textures combine with the glamorous black interior.

The Cool color scheme is targeted at people who are expressive and sensitive to sports and fashion. It evokes an active and classy feel. This scheme combines a magical blue body color with a glamorous black interior.

Finally, the Elegance color scheme offers a playful spirit in the midst of a calm setting for adults with a sultry side. The green body color is refreshing but deep. It combines with an orange-brown that imparts an active image.

5.2. Body Color

Three new body colors – a gun metal, a blue, and a green – express the toughness of an SUV and the bewitching look of a coupe. Each effectively changes expression according to the angle, taking full advantage of variations in the dynamic surfaces of the exterior styling.

Ruse Black gets its name from a black flower (the word “ruse” refers to playing tricks). The bewitching look of purple on deep gun metal was intended to look mysteriously

attractive as it reflects the nighttime cityscape.

Morpho Blue gets its name from the beautiful morpho butterfly characterized by its metallic brilliance. Its range of variation, from blue to purple, gives the VEZEL an attractive expression that is deep and multi-faceted.

Misty Green is not the lush green of early summer, but rather the calm reddish-green of late autumn. The addition of gold accents creates a refreshing mellow image.

5.3. Interior Color

The aim of the interior color was to make the simple interior styling, with its emphasis on functionality and texture, more conspicuous. Thus the development team narrowed down the decorative expression to plating and piano black, creating a vivid sense of tension in a space regulated by its underlying tone. The seat cover contains a pattern created by weaving and knitting techniques and takes advantage of the characteristics of the material to create a look of depth.

Passion Black completes a new black interior characterized by youthfulness and enthusiasm. It was intended to be a black that is actively chosen, not a black that one chooses because it is “safe”. The emphasis here was the contrast in glossiness created by the material. The upper surface of the instrument panel has large grains that form a

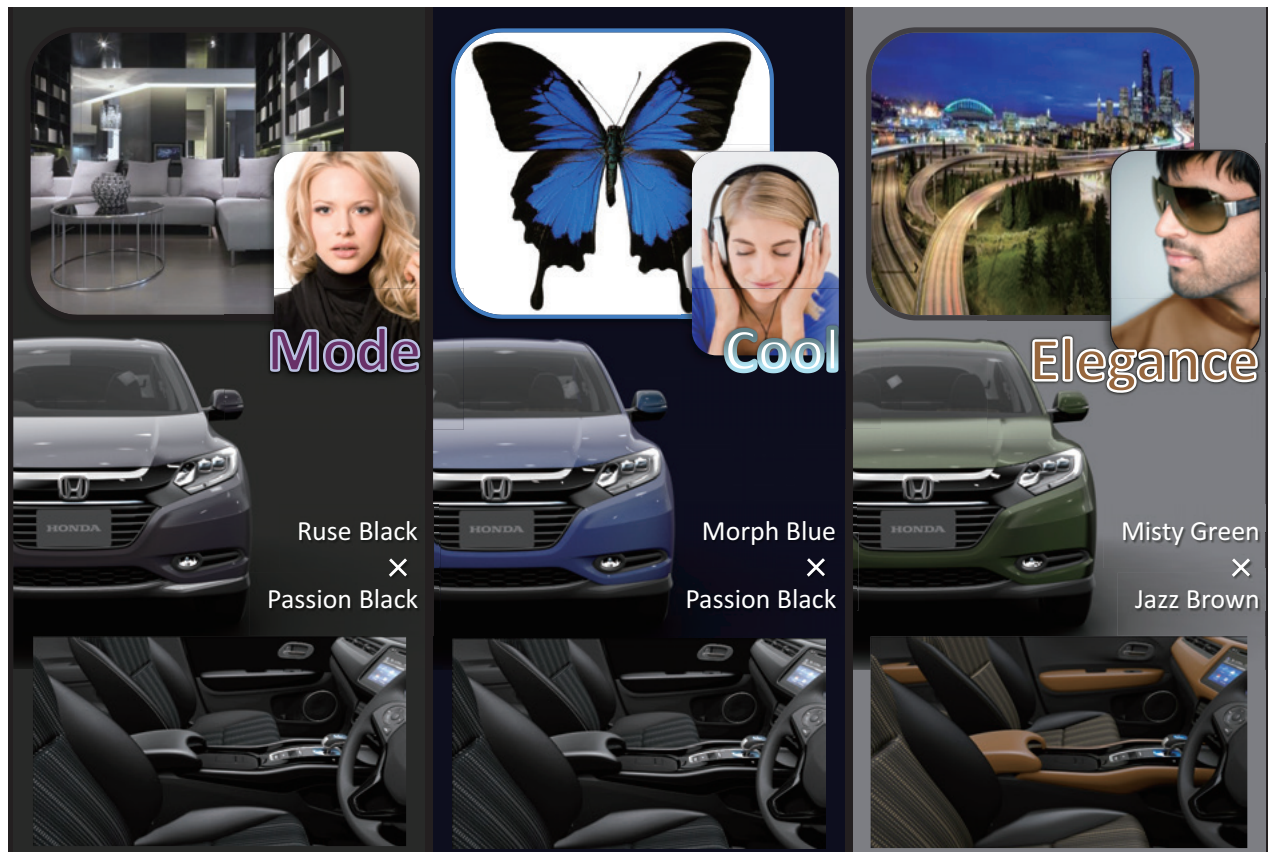


Fig. 30 Three types of coordination

pattern with low reflectivity emphasizing functionality. The middle pad is soft with a small-grained, smooth leather-like material. Typically, leather materials have a texture that restrains glossiness as far as possible, but the middle pad of the VEZEL is engineered to be highly glossy. Its expression is quite different from that of the top surface of the instrument panel. The contrast among the three levels of glossiness – the dry top of the instrument panel, the smooth middle pad, and the piano black panel that sparkles as if wet – produces a glamorous black world.

In contrast to the conventional image of calm brown interiors, Jazz Brown completes a new brown interior that expresses the playful spirit of active adults. The seat covers have a main material of calm dark brown with glossy gold stripes running throughout. This coordinates the seats with the Misty Green Pearl. In addition, the instrument panel middle pad, the center console, and the armrests use a jaunty orange-brown to create an energetic brown world.

5.4. The Chemistry of Combination

Green body colors are not supposed to sell well in the Japanese market, so the development team anticipated that it would not be easy to convince everyone concerned that it would be a good idea to develop Misty Green. In addition, many customers who consider a brown interior like Jazz Brown when they are thinking about their purchase ultimately choose a safe black interior, so these have also not increased sales.

The aim in this color development process was to achieve both toughness and elegance. The team therefore came up with a challenging proposal: combine Misty Green and Jazz Brown, neither of which would supposedly sell. The result of this experiment was a synergy such that each color brought out the attractiveness of the other. Ultimately, this proposal raised some high expectations such that it would be treated as an appeal color when sales started. In fact, whereas the sales plan anticipated a certain percentage of customers favoring the Misty Green body and Jazz Brown interior, the actual percentage who did so exceeded the plan numbers several times over. This is currently driving the strong sales of the VEZEL. This shows how important it will be to use coordination to propose world views during color development in future. Additionally, the ability to offer customers a wide range of choices can help them realize things they never noticed before, and allow Honda to bring more color into their lives.

6. Conclusion

In recent years, one does not hear people use expressions like “That is so much like Honda”. The development of the VEZEL was a way for team members to ask themselves what it means to be Honda-like. It is not enough for a car to be convenient and comfortable. To be Honda-like is to make people feel positive when they get in. To be Honda-like is also to bring new feelings into the lives of those

passengers. The desire to build such a dream car was shared by the members of the development team as they created the VEZEL.

The package combining the personal feel of a coupe with the utility of a minivan; the exterior design that is both brawny and sultry; the interior design with both spaciousness and a personal feel; the color design evoking intelligence amidst strength: all of these were achieved by a team truly committed to the customer as it pursued its common theme of “sensuality.” The VEZEL development team imagines a customer seeing this vehicle for the first time and knowing instinctively, “This is what I want”. Or riding in it for the first time and knowing for sure. And living with the VEZEL day after day and becoming convinced beyond all doubt: “This is so much like Honda”. Nothing would make the development team happier.

Honda is known for delighting customers by building things that never existed before. However, because of their experience and habits, developers tend to work in ways that avoid failure, unconsciously putting up barriers that make them unable to take on new challenges. And in many cases the things that never existed before are on the other side of that barrier. There is only one source of the strength to get over that barrier: the firm conviction that “this is exactly the right value to offer customers”. Honda’s true identity does not reside in ideas or new technology: it is the courage of each developer to confront that barrier when necessary.

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