

Styling Design of 2018 PCX

Daisuke KURIKI¹

Hirofumi YAEGASHI²

ABSTRACT

Regarding design themes of the PCX, “elegance” was set for the first generation model and “innovation” for the third. The vehicle designs based on these themes were both well received by the customers. When the design direction was examined for the fourth generation model, it was decided to pursue satisfactions of both supporters of previous designs. Based on these considerations, “beauty and power” was determined as the design theme. Also, a requirement sought by the customers of the targeted market was to have a distinctive presence not overlooked even in a crowded traffic running with other motorcycles. Another important requirement was the convenience in daily use. To fulfill that, styling design featuring curved surfaces, front and rear designs appealing its distinctiveness, and the convenience-centered design for the handle bar and its neighboring area were implemented. As a result, the next generation PCX design was completed.

1. Introduction

The first-generation PCX, which was released in 2009, was developed as a premium sit-in type scooter. In the 125 cc and 150 cc scooter segments, there had not been such sit-in type model up to that point. In Japanese market, they, especially 125 cc class scooters, have been recognized as highly cost effective vehicles. This is due to relatively low maintenance costs such as lower tax and the benefits of the insurance system that can be combined with the coverage of four-wheeled vehicle, as well as better fuel efficiency. The PCX was launched as a higher value added model having product appeals equivalent as those of higher class models, bestowed the model a status distinguished from other models in the same class. As a result, the model met practical needs such as commuting. In addition to that, the model was recognized as a highly value added product that satisfies the feeling of ownership. The customers highly appreciated the features distinguished from those of the other vehicles in the same class. One of such features is the comfortable seat that is usually hard to realize on a vehicle body of such compact dimensions. Fine balance of practicality and higher added values was recognized in various countries other than Japan as well (Fig. 1).

This paper describes the exterior design of the fourth generation PCX released in 2018. The final exterior design of the fourth generation PCX is shown in Fig. 2.

For comparison, Fig. 3 shows the external views of the

first and third generations of PCX, both commercialized so far. For the second generation, the functions were reviewed and the frame structure was revised. However, the design had not been changed. Therefore, in this paper, the second generation model will not be picked up for reference.

Acclaimed in many countries in the world, PCXs have been developed inheriting their unique styling design while incorporating advanced equipment of each era. All the previous models have received high praise from customers, and, same as the total vehicles themselves, there is nothing to be picked up as a dissatisfying point in their designs. For that reason, it was rather not easy to determine what kind of design to deliver to customers in the fourth generation PCX. In these circumstances, the design development of the fourth generation PCX was started.



Fig. 1 Global sales of the PCX

¹ Honda Motor Co., Ltd.

² Honda R&D (India) Private Limited



Fig. 2 Fourth generation of the PCX released in 2018



Fig. 3 The PCX of each generation (top: first generation, bottom: third generation)

2. Exterior Design of PCX Relative to Customers' Expectations to Vehicle

When I started the exterior designing of the fourth model of PCX, I thought that the most important thing is to experience the feelings of the customers by being practically involved with the PCX, as the former PCXs have been well received all over the world. Because of this mind-set, I made up my mind to become one of the PCX users when I was assigned to this development project. Through this experience, I could realize the good points the PCX has, such as the vehicle size suitable for riding in a congested traffic environment and the gauge indicators providing good, comprehensive information. Based on what I experienced, I could get a thorough understanding about the importance of usefulness that the PCX offers as a commuter vehicle along with how Japanese users recognize the importance.

Furthermore, we wanted to get more knowledge in Thailand, which is one of the major markets for the PCX, as well, from a closer view in the real conditions to know the customers' acceptance and the environment of the vehicle use. Accordingly, along with a design modeler, I went and stayed in Thailand to take part in the field survey conducted there. This was to know the difference of traffic environment between Japan and Thailand and to understand the kinds of conveniences that Thai customers pay attention to, and to listen to their opinions to this scooter based on these information.

Through the interviews, a significant thing we learned was that the customers in Thailand appeal themselves by showing their motorcycles they ride. The entities they claim have two orientations. One of them is their status and the other is their safety consciousness.

The first thing to be noticed as the background, the traffic situation in Bangkok, where so many four-wheel and two-wheel vehicles are running mixed together, was exhibiting a different status from that of Japanese traffic congestion. The PCXs were recognized immediately even in that kind of traffic circumstance compared to cub type motorcycles or other motorcycles and scooters, surrounding the PCXs. In particular, the vehicle front area shaped with a large-scaled form that comprises the lighting equipment was taking charge of asserting their existence (Fig. 4). This assertion of existence satisfies customers' minds of having status, and at the same time, contributes to their safety by letting the surrounding people be aware of their existence in the traffic. On the other hand, such a feature was not felt in the rear appearance of the PCX passing by. As the photo shows (Fig. 5), the insistence of tail light unit was not strong enough.

As the next step of our survey, we directly met the PCX users to hear opinions from them. Men in their 30s are target users of the PCX in Thai market. We have met one of those users who was an owner of the third generation PCX. Here we introduce an example of such interviews (Fig. 6).

As same as Japanese users, commuting was the user's main purpose of using the PCX. In addition, the point he liked the most about the PCX was its styling design. He liked its dignified form, which is comparable to scooters in upper segment of 250 cc class, and the elegant styling design different from those of cub type motorcycles and other



Fig. 4 View of intersection in Bangkok. Front area design of the PCX is distinctively standing out from other motorcycles.



Fig. 5 View of intersection in Bangkok. Rear area design looks less distinctive.



Fig. 6 User survey in Bangkok, Thailand

scooters. The customers' needs for exterior design of the vehicle also appears in installed customized parts. However, regarding customized parts as well, any significant difference was not found compared with the vehicles that Japanese users own.

There is a customary practice in Thailand that the hierarchy they belong to is exhibited by what they own. That is also applied to parking spaces where the designated parking areas are defined depending on the engine capacities and vehicle types of motorcycles (Fig. 7). In other words, I reaffirmed their unchallenged dignity that does not get melted into surroundings but asserts their existence.



Fig. 7 Parking lot exclusive to high-end scooters such as PCX

3. Exterior Design Development for Fourth Generation PCX

For the exterior designing of the developed PCX, requirements and directions, which will be mentioned below, were defined in order to satisfy the former customers who recognized a great value in the exterior designs of preceding PCXs.

3.1. Exterior Design Satisfying Good Styling and Usability

With the development key word of "Personal Comfort Saloon," the PCX has evolved over the times to provide new values to the customers around the world. The first generation of the PCX has been marketed mainly in Japan and some Asian countries. From the third generation, it has been sold to customers all over the world and that resulted in having good reputations. Moreover to say, the points highly evaluated were common in all countries. The PCX is the only scooter that has combined characteristic of 125 cc class size and weight while offering sitting-in seating. The preceding PCXs have realized a good balance between

usability that fulfills almost all the requirements from users in commuting use and good exterior design that satisfies their desire for ownership. That is to say, the PCXs have followed a good feature that realized both presence and usability exceeding other scooters in the same class. In order to make the developed product good enough as the fourth generation of the PCX, we wanted to create a next-generation version of styling design for the exterior of the PCX, while letting it have a required presence and usability, and moreover, advanced features that have been inherited through the former models as their development key concept. On the other hand, design points that contribute to enhance subtle usability, which includes arrangements of the equipment around the handlebar, displays on the instrument panel, and the storage compartment, were sophisticatedly enhanced. In addition, we kept in mind that the design should be so arranged to provide comfortable operation feeling.

3.2. Inheriting Former Generations' Stylings, Setting Exterior Design Direction for Fourth Generation of Model

In the previous section, basic elements required for the fourth generation model and the things that the preceding PCXs have established were described. However, it took time to determine the direction of styling based on these factors. Each of the styling designs of the first and the third models had a unique personality and had individual fans for each design.

The styling design of the first PCX expressed elegance and gained the support of many people. The styling of the third generation PCX expressed advanced features such as the use of LEDs in lighting equipment, and many people supported this design as well.

Therefore, we wanted to make the exterior design for the fourth generation model of PCX to have both elegance of the first generation and technically advanced sense of the third generation. By doing so, we desired to have the both customers who favorably received either of those exterior designs be satisfied (Fig. 8).

3.3. Exterior Design Concept for Fourth Generation PCX

The exterior design concept of the fourth generation PCX was set as “Beauty and Power” (Fig. 9).

In addition to elegance that the first generation had and technically advanced sense that the third generation had, the styling design trend of the recent luxury four-wheeled vehicles was also reflected to the design. In expressing the contrary directional keywords of beauty and power into one design modeled creation, we aimed a creation of design modeling expression that feels the existence of massive lumps while exhibiting the beauty emanated from smoothly connecting surface shape bridging the front and rear areas of the vehicle body. In this way, we tried to realize elegant beauty and powerfulness. Furthermore, not only the vehicle

body shapes but the same design modeling expression was reflected to all the parts designs including the lighting equipment.

3.4. Co-creation with Overseas Designers

In order to increase the diversity of ideas for the exterior design, we held a styling study meeting with designers from various countries. This was to realize a design used more globally than ever by jamming up the designers' senses all over the world beyond only the involvement of Japanese people. In response to the design concept of “Beauty and Power,” individual design senses they had were expressed in their sketches. After many discussions we had with overseas designers, we came back to proceeding the work to achieve a styling design suitable for the fourth generation PCX model (Fig. 10).

3.5. Pre-crafted Clay Model and Evaluation on It

For the development of the styling design for the fourth generation PCX, different from the steps we usually take, we decided to craft a clay model to start with preceding to the finalizing of the styling sketch. I selected some idea sketches and examined the modeling. PCX is not a product that pursues users' hobby interest, but a commuter vehicle that supports everyday life. Convenience in daily use was a crucial factor in addition to good appearance. On the other hand, in the vehicle development, the redesigning of the body frame configuration was also envisioned in the development items in addition to the change of the engine unit. In the motorcycle exterior designing, the finalization of the styling sketch practically fixes the shapes of the



Fig. 8 Styling design concepts for first and third generation models



Fig. 9 Design concept for fourth generation model

vehicle frames and the way how the frames are arranged within the vehicle body. Therefore, once the styling sketch is finalized and the clay modeling is started after that, it has already become hard to apply detailed arrangements reflecting thoughtful consideration that leads to usability enhancement, and small changes that have something to do with the feeling arose from the design expressions. In other words, the three-dimensional representation that the modeler wants to realize interferes with the frame components that make up the interior of the vehicle body, forcing the freedom of modeling to be compromised. In this PCX exterior design development, I wanted, more than ever, to heighten the modeling quality of the details up to the eminent reaching the ideal level. For that purpose, the clay modeling was conducted prior to the finalization of the styling sketch this time. Considering the area to be added up the lump to have more volume and the area to be scraped out to decrease the volume, the pursuing clay modeling was made up and the shape was measured to get digital data and immediately check its feasibility with frame designers. With this process, we achieved both performance and appearance while securing degree of freedom for the design modeling.

Moreover, in the process of the exterior design creation, we carefully examined the vehicle body surface expressions under the direct sunlight in the open air. The reason why we had special attention to the evaluation results of this out-of-door observation was that, particularly for this model, in the very limited portions with small total surface area usually allocated on a scooter type vehicle body, we were trying

to create curvatures of richly plumped surface and the expressed formation of lights and shades should have been thoroughly examined whether to match what the designer had intended (Fig. 11).

3.6. Determining Styling Design Sketch and Representing into Three-dimensional Objects

In the middle of this styling design procedure, final sketch was selected, and was reflected to the clay modeling work that was already in the process. The selected sketch was challenging to model (Fig. 12). In most of the cases, a sketch drawn by a designer expresses clearly described



Fig. 11 Preceding clay model in photographic views taken indoors and outdoors

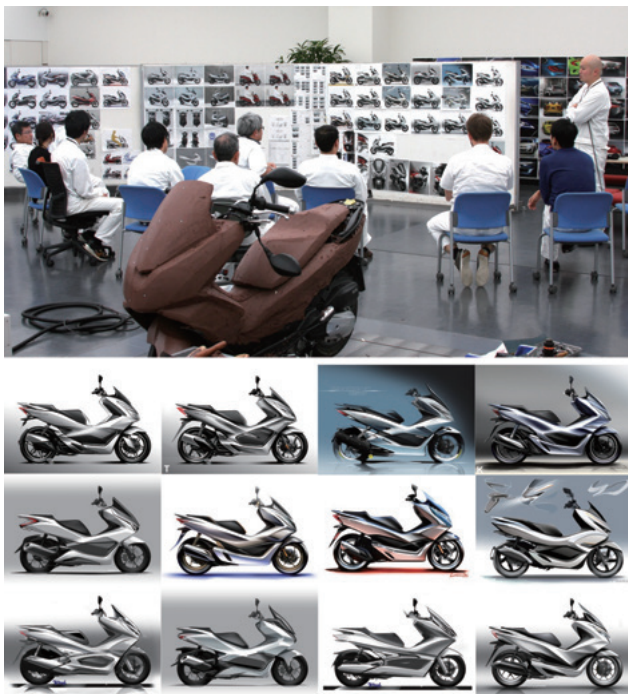


Fig. 10 Discussion scene with designers from various countries on sketches, and sketches they prepared



Fig. 12 Final sketch

characteristic lines. However, in the final sketch of this particular PCX, there was almost no characteristic line. Generally, a line created in modeling is a representation of the ridge or valley line made where two surface planes meet. That is, the quality of the constructed surface planes determines the properties of the line. Accordingly, a characteristic line that appears in the sketch is the line created as a result of the surface planes to come across. In the experience expert designers gained so far, they read the properties of each surface from the momentum of the line, and create each solid using it as a guide. However, not any line that could be identified as a characteristic line was represented in the final sketch provided this time, and the usual modeling method could not be applied (Fig. 13). As we could not use a characteristic line as a designing clue, we controlled the surface rises and falls and we continued the design work repeating massing-up and shaping-off relying on the gradations of light and shadow. In each time, we put a silver film and checked the contrast to pursue a beautiful surface. In order to express a sense of vigor and skeletal structure beyond expression of an elegance, we considered the allocation of “where to accumulate power, where to release power” or “where to impose a tension.” Muscles of a human body and various animals were also referenced, while observing the surface representations applied for the latest four-wheeled vehicles. Since the models created from such a process included the possibility of various surfaces that were not expressed by the sketch alone, the interpretation of the viewers varied, and the surface shape could not be determined immediately.

Furthermore, the factors required for the appearance are not only the beauty and newness of the design. Even a slight change in the surface shape will affect aerodynamics and change the penetration path of wind and rainwater. A

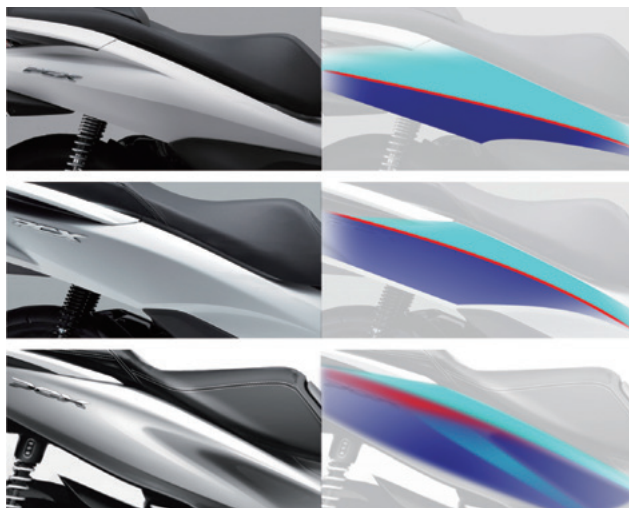


Fig. 13 Previous PCX models and final sketch (top: first generation, middle: third generation, bottom: fourth generation)

two-wheeled vehicle rider is directly exposed to the outer environment because the vehicle does not have a sheltering structure like on a four-wheeled vehicle. Consequently, even a slight change in the surface shape property will affect the comfort of the rider. As the PCX is a motorcycle that asserts itself as a premium sitting-in type scooter, comfort during driving is an especially important factor compared to other models. Therefore, that requirement is more demanding than conventional scooters.

Particularly for the PCX developed this time, it was necessary to represent the newness by the expressions produced by the body surface planes. On the other hand, strong constraints are imposed in its aerodynamics design as the vehicle body exterior surface planes do not have clear characteristic lines. Accordingly, we repeatedly did the trials and investigations to pursue the creation of visual newness while fulfilling the rider's comfort. Variety of opinions arose from the differences in perceptual cognitions produced by a surface plane, and we repeatedly conducted the verification of those opinions by actually crafting the proposed surface planes. We made a lot of efforts in doing this repetitive process and tried to find the direction to be followed. Figure 14 shows the history of changes of the clay model in our efforts. The top left is the one at the initial stage of the development. The transition follows the direction from left to right and the bottom right is the final completed model.

3.7. Further Maturing of Styling Design

Through the above mentioned process, the clay mockup model was completed. When the design process got to this stage, we can, for the first time, move onto the verifications to the quasi product level. When we reach this stage, we felt the need to further strengthen the uniqueness and presence as the fourth generation as well as the freshness compared with the third generation design, which we could not notice at the clay modeling stage.

To achieve that, the designs of front and rear areas of the vehicle body, which are important for assertion of individuality, were revised. Furthermore, the sophistication of the unique design model expression of the side areas of the vehicle body was raised up even more. As a result, while succeeding the characteristics of the first and the third generation models, it was made possible to make a styling that can clearly tell customers that the generation of the model had been changed. The difference before and after the refinement process is shown in Fig. 15.

3.8. Distinctive Characteristics of Developed Styling Design

The characteristics of the styling design developed this time will be described below compared to the styling designs of preceding generations of the PCX.

The design trends of European automobiles in each era have been adopted to the preceding models of the PCX. In the first generation model, the impression of relaxed stretch

with elegance, formed by horizontally based characteristic line flowing through the front and rear areas of the vehicle, was expressed above the swelled shape of well-rounded curvatures. In the third generation model, the front upper and lower bodies, which used to be designed as separate surface planes in the first generation model, were united to engender a sense of unity with the rider. At the same time, as its basis, a surface design expressing high tension was implemented so that the styling was designed to be simple

and modern. As described in the previous chapter, the fourth generation model was designed to express keywords of contradictory properties that were beauty and power. In the model design, on the vehicle body surface connecting the front and rear portions, we tried to create an expression that makes feel the lines weaved above that vehicle body and the body mass expressing the power. For the model design of the side covers, we tried to convey symbolic expression of the convergence of the body masses while



Fig. 14 Design changes of clay model



Fig. 15 Comparison of photographs of clay model designs before and after additional deeper sophistication (top: before change, bottom: after change)

imagining sturdy muscle. Furthermore, the surface plane that gives tense atmosphere was formed in the manner of supporting the center area structure of the side covers from surroundings (Fig 16).

As for the silhouette of vehicle body sides, the modeling beauty of connecting flowing line with a sense of high quality from the front to rear area of the body and the sense of unity of a rider and the vehicle contribute to generate the presence of the PCX. We thought that should be inherited in the fourth generation model as well (Fig. 17).

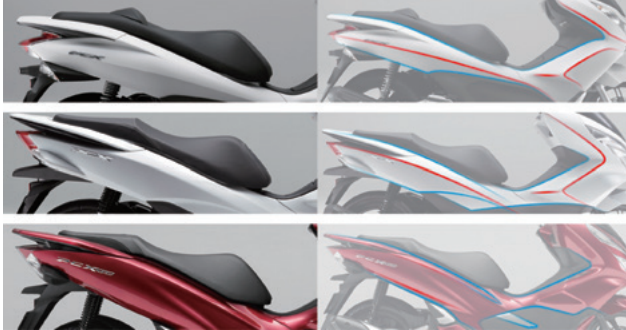


Fig. 16 Comparison of designed surfaces of individual PCX models (top: first generation, middle: third generation, bottom: fourth generation)



Fig. 17 Riders' postures and atmosphere of integration with vehicle body (left: first generation, middle: third generation, right: fourth generation)

4. Design Details

4.1. Front Design

The preceding PCX models have been developed strongly committed to the front designs in order to assert their presences.

The first generation model was equipped with a front combination light that integrated dual headlights, turn signals, and position lights, which occupied the majority of the front area. Due to the size of the area of this integrated lighting system, it was possible to show a presence that no other vehicle had (Fig. 18, top). In the third generation model, the LED lighting system, which was being adopted in European automobiles at that time, was first introduced to a commuter type motorcycle. Characteristic lines using

light guides were represented by white light lines that can be yielded only by LEDs but never by incandescent bulbs. By this application of the device, a new lighting system was realized, and it contributed to the vehicle visibility as well (Fig. 18, middle). In the fourth generation model, the LED substrates were placed diagonally with respect to the headlight that is the main illumination. It is commonly said that diagonal arrangement of an electrical circuit board is hardly feasible but, as this obstacle was overcome, aggressive sharp look of the vehicle face was realized. In addition, the position lights connectedly designed to the turn signal lamps were illuminated in a line manner enhancing the presence. Moreover, the parts in the motif color were arranged so that to bridge over the headlight and the position light. That made the design sharp making a new vehicle face that have never been existed (Fig. 18, bottom).

4.2. Rear Design

In the PCX developed this time, it was desired to realize a tail light with more enhanced distinctiveness and presence compared to the third generation model. For the tail light in the third generation model, some structures were installed within. However, when it was looked from outside, it only exhibited a simple square shape. Furthermore, because the turn signals were placed outer sides, dynamism was missing in its design (Fig. 19, middle). In the fourth generation model, the tail light and stop lamp have got located in the same area to make the best use of the limited space within the rear lighting component. As a result, the degree of freedom in design for impressing the light-emitting part was increased, and a unique and sharp impression could be given by the strip-like shapes located at upper and lower rows extending in the left and right. By placing the turn signals between the upper and the lower rows, it was integrated with the entire design of the rear lighting



Fig. 18 Comparison of headlight designs (top: first generation, middle: third generation, bottom: fourth generation)

component, and was able to show its presence when lit (Fig. 19, bottom). By applying these designs, when the vehicle is viewed from the back as well, it was made possible for the vehicle to be clearly identified as the fourth generation PCX even at a glance.

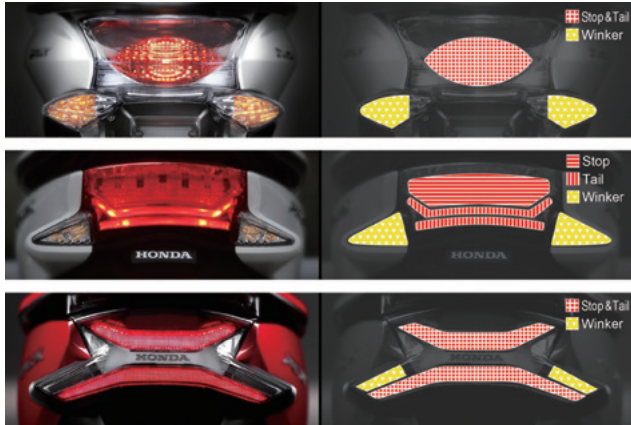


Fig. 19 Comparison of designs of rear combination lamps (top: first generation, middle: third generation, bottom: fourth generation)

4.3. Cockpit Design

As a scooter used for daily commuting, when usability is considered, it is very important for the information presented by the displays and indicators to be enabled to be confirmed instantly. In the fourth generation model, the visibility was enhanced further while expressing the advancement in functionality by applying full-digital indicators. We decided to give priorities of the indicators' visibility in the order of speedometer, clock, fuel gauge, and odo/trip meter. These are arranged in the center of the gauge unit so that the desired information can always be recognized with priority. The turn signal indicators have a characteristic shape that matches the overall design of the instrument panel. The other indicators are arranged on the left and right sides of the gauges to make it easier to grasp the presented information when lit. In the design of gauge indicators' numbers and letters, the letters of numbers for speedometer, which has the highest importance as information, were given the largest font size. Regarding the other information, we changed font sizes appropriately while paying attention to their spacing as well to get better visibility (Fig. 20). Moreover, the digits for numbers used for speedometer have increased to 33 segments per digit in order to obtain better legibility than the commonly used one-digit 7-segment characters. We made the displayed

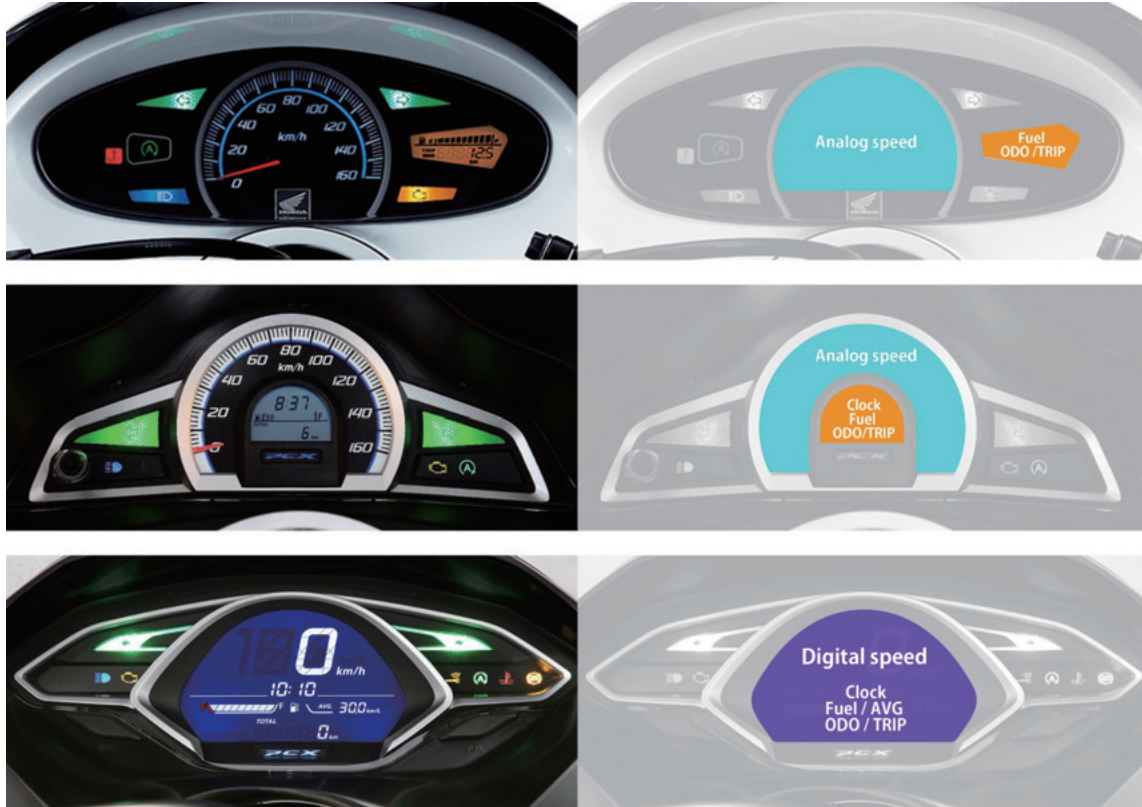


Fig. 20 Designs of meter units of previous and current models (top: first generation, middle: third generation, bottom: fourth generation)

characters stand out by using a different font from those used in other locations (Fig. 21).

For the handlebar, bar-type handle was adopted that is inherited from the first generation model. This is also a result of considering users' convenience such as attaching accessories around the handlebar. In the first and third generation models, the handlebars and its adjacent were chrome plated. In the PCX developed this time, the design was changed to the design featuring black color as well as chrome plate. The shape of the handle weights was the same from the first generation to the third generation models. However, in the fourth generation, special attention was paid to the shape of the handle weight as well, realizing a higher quality appearance (Fig. 22).

4.4. Engine Unit

We had been planning a large scaled advancement in the power unit compared to previous ones such as by having a derivation model of hybrid engine type (hereafter HEV) and the enhancement of drivability with an increased capacity of the air cleaner. Along with that, the engine unit including the air cleaner was entirely redesigned to express its evolution. As a conventional design trend, the belt converter cover and the air cleaner cover are generally separated.



Fig. 21 Comparison of number of segments (left: 7 segments, right: 33 segments)



Fig. 22 Designs of handlebars and their adjacent areas (top left: first generation, middle left: third generation, bottom left: fourth generation), and handle weights (top right: first and third generations, bottom right: fourth generation)

However, in the fourth generation, the belt converter and the air cleaner were united in its styling design as if they are one functional part, and a design with a sense of unity was applied. The belt converter cover has a design that combines a sharp shape reminiscent of a swing arm and a circular shape that feels the pulley built into the cover (Fig. 23). In the future, this engine unit developed this time is expected to be used for many other products than the PCX as well. Therefore, the design of the engine unit, even as a separate component, was designed to have a universal image that can be applied to any product while maintaining the appearance that reminds evolutions.

4.5. Wheels

The developed PCX adopted wider tires. Along with this, the design of the wheels was also renewed. The spokes have a shape that becomes wider from the hub to the rim, and it has a silhouette that makes you feel the movement to the direction of rotation. Through these design effects, we aimed to give a sturdy impression and to make it look attractively beautiful when rotated as well. In addition, the number of spokes was increased from 5 to 8 from the preceding model, thereby producing elegance when rotated (Fig. 24). In the process of this design work, a prototype

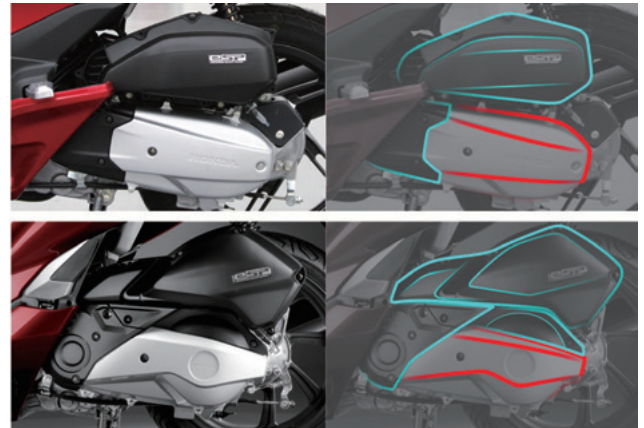


Fig. 23 Design of engine unit (top: first and third generations, bottom: fourth generation)



Fig. 24 Wheel design (left: first and third generations, right: fourth generation)

wheel was actually rotated to see if the representation when rotating looked beautiful and the evaluation results were repeatedly reflected to mature the details of the shape. In addition to the favorable effect on the styling design, the increase of the number of the spokes also enabled to decrease the radial stress on the rims and contributed to make them thinner. The hubs and neighboring area were also lightened, and the wheel could be made lighter by 0.7 kg (front and rear wheels combined) compared to those of the previous generation model⁽¹⁾.

4.6. Coloring Design

In the coloring design, we aimed for a high-quality impression with elegance and calmness. Figure 25 shows the color lineup of each country. We took into consideration that the color lineup in developed exterior design would feel a globally united image. The coloring design was determined considering that the beauty of the styling model created this time would stand out best. Especially, the tone of the red color is the coloring that heightens the impression of elegance and high quality by enhancing the beauty of

modeling design of the fourth generation PCX. The silver is a color tone that beautifully expresses the protrusions and dents of the vehicle body surface planes together with a high quality impression brought by the calm color tone. Black and white colors were adopted as standard colors that are widely loved by any age groups.

In this development, the coloring for the model with a hybrid engine was also designed at the same time as that for the gasoline engine model. In order to express the difference from the coloring of the gasoline engine model, we modified not only the body color but also the color of the functional parts. Details will be described in Chapter 5.

4.7. Completion of Mass Production Model Design

Applying the methods described so far, the exterior design of the fourth generation model was completed. No effort was spared to achieve the distinctive presence and ownership desired for the fourth generation PCX. The distinguished presence, and satisfaction of ownership, sought for the fourth generation PCX had been achieved by implementing all the necessary measures. These measures



Fig. 25 Color variations applied to major markets

range from the whole vehicle body styling design, including the beauty of the modeling expression that connects the front and rear areas of the body, vehicle outer surface with a distinctive surface plane structure, and the coloring design that enhances the impression, to the designs of functional parts created with attentions paid even to the subtle details (Fig. 26).



Fig. 26 Completed design of mass production model

5. Exterior Design of Hybrid Model

The PCX hybrid is a model equipped with the hybrid system firstly introduced for motorcycles. For that reason, we wanted have the design exclusive for the hybrid model giving the different impression from the gasoline engine model. We made it to have the sense of unity as one of the Honda hybrid products by adopting the emblem with the hybrid logo same as in four-wheeled hybrid vehicles of Honda. Therefore, from the sketch stage, we examined how the logo was investigated in the exterior design. Those investigations included the balance of the exterior design

with the PCX logo, the position and size of the emblem to be attached to the vehicle body (Fig. 27).

In addition, the blue color, which symbolizes hybrid vehicles, was applied to the line shape illumination parts of the headlights and the tail light, the seat stitches and the ornament of the smart key. We represented the sense of unity by applying a deep dark blue color to the vehicle body while making the accented color of blue, which belongs to the same color system, stand out. The luggage compartment under the seat, because a part of that space is occupied by lithium-ion batteries, was specially designed to accommodate a full-face helmet. As mentioned above, the quality of the completed vehicle was brushed up by applying intentions of the designers not just to the whole-scale vehicle styling but to the finest details as well (Fig. 28).



Fig. 28 Completed design of mass production hybrid model



Fig. 27 Color sketch and mass production model of hybrid model

6. Conclusion

In the development of the fourth generation PCX, we endeavored to design a product that offers a new satisfaction together with or beyond the advantageous aspects the preceding PCXs had. In this development, the designers' involvement was not limited to the outer covering parts but included all the functional parts. The design of the fourth generation PCX is the culmination of the strong intention the design team had and the achievements engineers realized with the high technologies. This model has been delivered to 355,000 customers worldwide by December of 2018 since the first delivery in Vietnam in December, 2017. It is reported that the model has been accepted with a good impression, even to the users of the first and third generation models regardless whether in Japan or overseas. I feel confident and proud that this PCX has become a product that customers around the world can truly appreciate. I sincerely hope that the PCX brand we have built will continue to be loved as a premium everyday commuting vehicle for customers all over the world.

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■ Author ■



Daisuke KURIKI



Hirofumi YAEHASHI