

Styling Design for 2018 Gold Wing

– Lighting system –

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ABSTRACT

We created a design for the lighting system of the 2018 Gold Wing motorcycle. To express a sense of innovation in terms of both function and appearance, we attempted to use multiple-eye LED headlights to create a “facial expression” for the motorcycle. In addition, we re-created the “wing line,” the pattern which represents an important part of the brand identity of the Gold Wing, using the new lighting system. We unified the impression given by the overall body of the motorcycle by incorporating the wing line pattern in the designs for both the front and the rear of the body. Our new lighting system design values both innovation and tradition, and it represents a big contribution in the development of the new design of the Gold Wing.

1. Introduction

One important requirement for the design of the lighting system for the 2018 Gold Wing (Fig. 1) was to give the motorcycle a new and unique sense of personality while expressing the essence of the Gold Wing at the same time.

The front fairing represents the face of the Gold Wing and features a design in which the placement of the headlights and turn signals makes it appear as if the wings are spreading out to both sides (Fig. 2). We named this shape the “wing line.” It has been inherited as part of the design identity previously developed for the Gold Wing.

As it is in the other styling design creation of the Gold Wings, it was sought to create expressions having the personality and to adopt the technologies that symbolize the



The Gold Wing Tour DCT Airbag (2018)

Fig. 1 The 2018 Gold Wing Tour



Fig. 2 The Gold Wing in former generations

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status fitted to the latest era while inheriting its identity.

Moreover, in the design of the rear combination light, we challenged the unity that reflects the image given by the front part also in the rear part. We describe our approach to designing a lighting system that embodies the styling theme for this model, “Styling with Refined Sharpness and Tension,”⁽¹⁾ in the following sections.

2. Front Design

The Gold Wings have been the motorcycles that are making the advanced features come into prominence and symbolizing the each era, by applying the styling designs utilizing the latest technologies. Moreover, novelty has even become a part of the Gold Wing’s unique identity.

Therefore, we decided to use Light-Emitting Diodes (LEDs), the light source which recently started to appear in the headlights for motorcycles. Our approach was to use the LEDs to create a new wing line and a new face to represent the Gold Wing, our flagship model.

2.1. Key Concept Behind the Headlight Design: Inheriting and Evolution of the Wing Line

When LED lamps are applied to vehicles, especially when they are applied as main lights, they are generally installed with reflectors. When they are used as position lights, they are usually installed with light guides. In contrast, for the head lights of the developed Gold Wing, low beam configuration that has the total of 10 lenses, 5 for each of right and left sides, was adopted applying multiple-eye illumination method to represent the impression of advancement in the equipment. In addition, we chose to create the trim line using light guiding lenses, which created a three-dimensional sense of depth and light.

The world’s first adoption of multiple-eye type headlights is on a motorcycle. We wanted to express the Gold Wing’s unrivalled sense of presence in the design of its lighting system as well by giving it a sense of character that is symbolic (Fig. 3).

Our goal was to give the Gold Wing a facial expression that exudes a sense of vitality and status with dignity and trust befitting of our flagship model. We considered how to achieve this goal through the design. The headlights, which serve as the “eyes” of the motorcycle’s facial expression, play an important role.

2.2. Research into Creating the Facial Expression through Multiple-eye LEDs in Two-lamp Type Headlights

2.2.1. A study regarding the differences in the impressions given by two-eye and multiple-eye lights in two-lamp system headlights

(1) The limit of two-eye lights

Before the advent of LED headlights, headlight designs were composed of projector lamps or reflector type lamps. For two-lamp headlight systems with headlights on the

left and the right, the headlights are composed of two-eye headlights with one eye in each headlight (hereinafter referred to as the two-eye type). The lamps are a crucial element in forming the facial expression. For two-eye type headlight systems in particular, people tend to think of the lamps as the “eyes” at a subconscious level⁽²⁾. Therefore, for the two-eye type design, the light sources serve as the pupils of the eyes, and the front often looks like the facial expression of an animal. There is a limitation in terms of creating a novel impression.

(2) An attempt of using multiple-eye lights

When multiple-eye configuration is adopted, in which the light sources are distributedly located, the center points, which draw attention like pupils, are lost, even though the headlights are composed like two-lamp-configured headlight. That creates the impression of some strange objects, which have never seen before and look inorganic or like compound eyes of insects, which are totally different from facial expression of animals. We have noticed that aforementioned specific characteristics multiple-eye configuration has some potential of creating something new, and studies exploring of that possibility began.

We conducted investigations, in order to create a lighting system design as if having a mind like an organic object, making challenge to apply a motif utilizing multiple-eye configuration, which usually leads to give inorganic expression.

(3) Examples of two-eye facial expressions

As part of our investigation on the use of headlights to create facial expressions, we firstly conducted a study of facial expressions created using two-eye type headlights, which are well-suited for representing facial expressions. Figure 4 shows examples of designs created with different combinations of eye positions, eye sizes, and lens shapes (contours) for two-eye designs.

The examples illustrate that by using different



Fig. 3 Wing Line implemented in lighting system design (top: developed design, bottom: previous designs)

combinations of simple elements, it is possible to create a variety of facial expressions, ranging from those that have an intimidating appearance, to those that have a calm and gentle appearance.

(4) Examples of multiple-eye facial expressions

Similarly, Fig. 5 shows examples of designs created with multiple-eye type headlights. As you can see from the figure, a facial expression cannot be easily represented when we apply multiple-eye configuration as the parts like pupils are lost.

(5) Discovering facial expressions created by the shapes around the eyes

We conducted further investigations in order to study which elements determine the facial expression of humans and animals.

In Fig. 6, we show photographs of the faces of lions and bald eagles, including the eyes, the region surrounding the eyes, and the area that corresponds to the eyebrows, as well as the movement of the area between the eyebrows.

The close study of these images reveals that the contour of the eyes and the relationship between the positions of the pupils has a large impact on the facial expressions of these animals. However, the images also show that the facial expressions are formed not only by the eyes, but by the shapes of the elements around the eyes as well, such as the eyebrows and the area between the eyebrows, and that these elements play an important role.

Therefore, to create the facial expression of the Gold Wing, we decided to make effective use of the surrounding design elements in addition to the headlights, in order to work on the design of the entire face.



Fig. 4 Examples of facial expressions constituted by binocular lighting designs

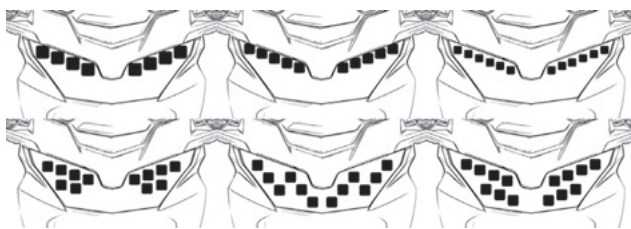


Fig. 5 Examples of expressions constituted by multiple-eye lighting designs

2.2.2. Use of Kumadori

As a part of the study described in the previous section, we decided to focus on the art of *Kumadori*, which refers to the patterns painted onto the faces of Kabuki actors. We studied it as an example of how to create facial expressions using elements placed in the area around the eyes.

Kumadori is the stage makeup drawn on the actors' faces in order to emphasize the muscles and veins of the face. Kumadori enable audience members sitting far away from the stage to recognize the facial expressions of the actors at a glance (Fig. 7).



Fig. 6 Examples of facial expressions of animals



Fig. 7 Kumadori (shadings on face)

Among the design elements that make up the Kumadori, the most important elements are the lines that dramatize the facial expressions. The Kumadori serves as an example that shows that it is possible to represent facial expressions using the structures of lines arranged around the eyes, not the pupils of the eyes themselves.

Therefore, in addition to designing the outline of the headlight lens, we also used the trim line made out of a light guiding lens on the interior of the headlights in order to represent the facial expression. The lines form the facial expression on the front of the motorcycle (Fig. 8).

2.2.3. Creating the high beams

We selected reflector type lights for the high-beam lights. Normally, reflector type lights are bright and stand out because they reflect their surroundings like a mirror.

Moreover, we placed reflectors behind the light guide lenses so that they reflect the black extension of the bottom part of the multiple-eye lens. In this way, we emphasized the multiple-eye lens and the light-guide lens by blacking out the reflectors (Fig. 9).



Fig. 8 Styling design sketches of vehicle front



Fig. 9 Difference in appearance due to difference in structure of reflector

2.2.4. Creation of parts that compose the multiple-eye LED headlight

We also put special care into the design of each part that composes the headlights as well as into the design of the overall lamp (Fig. 10).

Additionally, we paid special attention to the details of the design for the low beam lamps, which are composed of multiple-eye lenses as well. We carefully designed the shapes of the extensions that surround each lens to give a three-dimensional impression and designed the shape of the area to which we applied surface texturing.

Furthermore, we created a design for the light guide lenses. Although the light guide lenses are subject to many optical constraints, we created a design that achieves an even and uniform illumination with a sense of depth. The light guide lenses represent a Kumadori that is beautiful when viewed from any angle.

2.3. Completion of Two-lamp Multiple-eye Headlights

We decided on a final design for the headlights which uses a multiple-eye illumination method with 5 lenses on each side, for a total of 10 lenses.

The multiple-eye LEDs arranged on the left and right sides along with the contour of the lamps, the shape of the area between the eyebrows, and the shape of the optical guide plates achieve the same effect as the Kumadori on an actor's face. Together, these elements represent the "eyes" of the motorcycle and create a facial expression that is full of vitality.

As a result of the study we conducted, we were able to develop a new method for creating the facial expression of the Gold Wing with multiple-eye LED headlights through the use of the lines surrounding the headlights.

In addition, the Kumadori that was formed by the light guide lenses also forms a part of the wing line that extends to the left and the right sides along with the position lights. The tips of the wing lines were placed as far out as possible towards the outside of the motorcycle. The tips of the wing line are located outside the vehicle as much as possible, contributing to the enhancement of the visibility from other vehicles (Fig. 11).



Fig. 10 Drawing showing emitted lights and sketch showing individual components



Fig. 11 Front view of finished design

3. Integrated Tail Lights

3.1. Uniformity with the Design of the Front

We used the sense of character imparted by the wing line formed by the headlights for the integrated tail light as well.

Although the front lamps tend to receive more attention than the tail lamps in terms of determining the impression that viewers receive from the facial expression of the motorcycle, the tail lamps are also important. When you suddenly notice a motorcycle passing by on the street, although the front of the motorcycle passes by in an instant, the rear of the motorcycle can be seen for a longer period of time and appears to trail after the front. In addition, when vehicles are driving one after another, the rear of the motorcycle ahead is continuously visible from the vehicles that follow behind. Therefore, the rear of the motorcycle is in view for longer periods of time.

Therefore, the facial expression created by the rear of the motorcycle is just as important as the front one for determining the impression imparted by the motorcycle.

For the Gold Wing, we incorporated the wing line motif in the design of the integrated tail lights as well. This is

because we thought it was important to consider the impact that the rear of the motorcycle has on the viewer — when the Gold Wing motorcycle that is heading towards the viewer passes by, after which only the rear is visible. We attempted to create a design that makes it look as if the light emitted from the wing line is showing through the chassis from the back. A viewer looking at the rear of the motorcycle after it has passed by would feel as if they were seeing an afterimage of the wing line that was seen on the front.

We wanted to create a design for the integrated tail lights that leaves a strong impression and that makes the viewer want to continue following the motorcycle with his eyes for extended (Fig. 12).

We were able to achieve this design on the Gold Wing since it has panniers on the left and right (Fig. 13).



Fig. 13 Styling sketch of vehicle rear

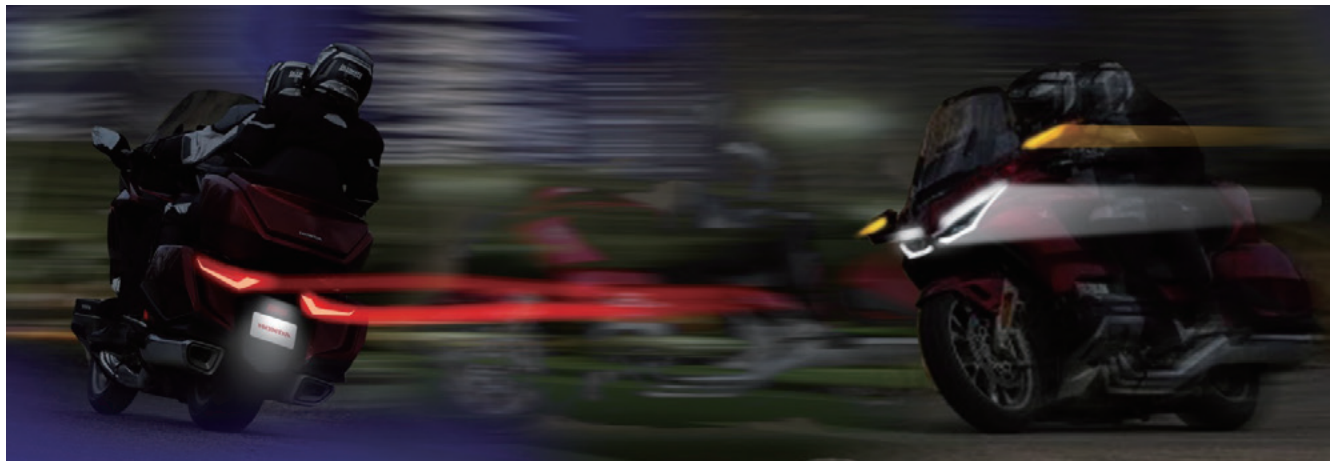


Fig. 12 Expression created by light emissions when vehicle has travelled away

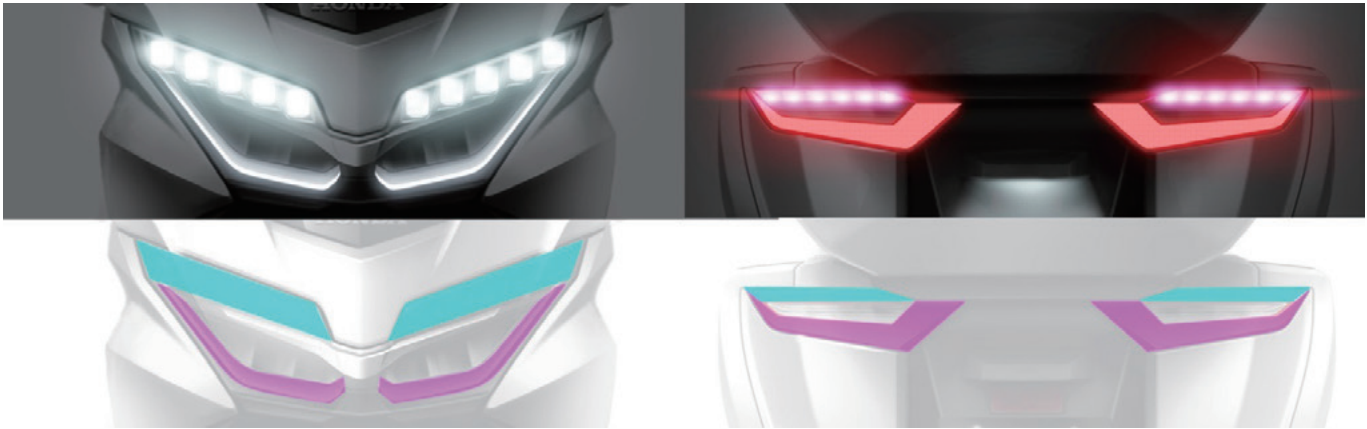


Fig. 14 Unified characteristic impression applied to front and rear lighting systems

3.2. Uniformity of Shine

We incorporated the elements that were used to create the facial expression of the front of the motorcycle, such as the two-lamp multiple-eye lamp and the Kumadori, into the design for the integrated tail lamps as well. In this way, we were able to unify the appearance of the front and the back of the motorcycle (Fig. 14).

In addition, in order to give a greater sense of design uniformity, we made the shape of the lights similar to the front and made the optical structure of the interior of the lamp similar to the structure used for the front lights as well.

The multiple-eye low-beams on the headlight correspond to the brake lamps on the tail light. We represented a multiple-eye light by combining an array of multiple separate reflectors with an outer lens with an independent cut.

The three-dimensional light guide lens on the headlight corresponds to the tail lamp. By combining the reflector and the inner lens, we created a three-dimensional and uniform illumination that is similar to the front.

The high beams on the headlights correspond to the turn signal lamps on the tail lights. We selected reflector-type lamps for the turn signal lamps, similar to the lamps for the high beams (Fig. 15).



Fig. 15 Sketches of parts constructing combination light



Fig. 16 Rear view of finished design

3.3. Completion of the Final Design for the Rear

As explained above, we created the unique wing line shape on the rear as well as the front. In this way, we succeeded in creating a tail light that leaves an impression that is befitting of the new Gold Wing. In addition, we successfully created a light that appears to extend freely to the left and right. By increasing the width of the lamp area, enhancement of the visibility from other vehicles, which was one of the design objectives, was realized (Fig. 16).

4. Conclusion

The lighting system that is deserved for the 2018 Gold Wing was designed. Some of the unique design methods are described hereafter.

We created a new method for designing lighting systems. The idea is to use the lines in the area surrounding the headlights to define a new facial expression for a motorcycle with multiple-eye LED headlights. By applying lighting system designs, which are based a motif of the wing mark, for vehicle front and rear, a consistent impression arranged in front and rear areas was created.

By adopting the latest technologies, the sense of advancement is expressed together with the inherited original features. Together with other original characteristics, the wing line was inherited and it contributes to create premium status as Honda's flagship.

References

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