

Styling Design of New MONPAL ML200

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ABSTRACT

Looking towards the advent of an aged society, the new Monpal ML200 four-wheel scooter was developed to increase the quality of life of a greater number of users.

Taking into consideration of using the vehicle in the city and suburbs, the basic framework is that of a “smart package” no wider than a bicycle. Visibility has been increased by the use, for the first time in a commercial vehicle, of the ASV-3 LONG technology employed in Honda’s Advanced Safety Vehicle.

The vehicle’s affection-inspiring front “face” and the trapezoidal form that provides users with a sense of stability were designed, based on the concept of offering a new style of mobility that is also firmly within the Honda tradition.

1. Introduction

“An outstanding engineer today should be both a superb engineer and a fine artist, combining the knowledge of a scientist and the sensitivity of an artist”.

With these words, Honda’s founder, Soichiro Honda, stated his belief that form is an important aspect of manufactured objects, and that if the form is right, then the content, for example the structure or function of an engine, will follow⁽¹⁾. As these words indicate, designers, like engineers, should constantly aim towards the creation of appealing products based on designs that are also superbly functional. The issue is to realize superb designs within the given constraints (hardware, cost, etc.), while avoiding extravagance. However, even if the design is superb, if it is not highly functional, the product is unfinished. When a scooter is designed for elderly users, the product should not only have an attractive color and form, but should also be useful. The design of the new model Monpal ML200 four-wheel scooter incorporated methods used in the vehicle design process in order to realize a design that would give the vehicle a strong presence, even when compared to an automobile.

2. Design Goals

During the development of the new Monpal ML200, elderly users of a suburban senior citizens’ center were interviewed to determine their thoughts regarding the design of four-wheel scooters. “They shouldn’t be too

conspicuous;” “They should be small enough not to bother pedestrians;” “I prefer ones with larger baskets.” As such responses indicate, the interviewees did not express particularly “positive” opinions regarding electric cart design. A simple design without a strong sense of presence was certainly viable, but the possibility of adopting the opposite orientation and producing a striking design was also considered, as the elderly, who may be seen on busy city streets, and active senior citizens, such as those who participated in the interviews, are fashionable and tend to wear highly colorful clothes. Designing a four-wheel scooter to be more noticeable would also contribute to increased visibility, making it easier for pedestrians and drivers to recognize the vehicle.

The design concept established for the new Monpal ML200 was that of “a new style of mobility that simultaneously fits firmly within the Honda tradition,” which meant that the design for the new Monpal ML200 would not be tailored exclusively for elderly customers. Four-wheel scooters are not only purchased by the actual users; the scenario of the vehicle being given to the user as a birthday present by children or grandchildren was also considered. It was assumed that potential purchasers see Honda cars and motorcycles on a daily basis, and would use similar criteria of judgment when choosing a four-wheel scooter for an elderly person. The Monpal ML200 is a Honda power product, and in this category, a design that fits within the Honda tradition indicates a design orientation in which there is no “generation gap” in the products.

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Fig. 1 Design concept

Figure 1 shows the design concept for the Monpal ML200. With “Quality Life” as the keyword, the focus was the creation of a vehicle that would make its users’ daily lives more fulfilling.

- (1) Stylish design for “Smart Riding.”
- (2) High level of visibility for “Safety Riding.”
- (3) Smart package for “Easy Riding.”

3. Image Catalogue

The first stage of the design process was to formulate an image catalogue in advance of the actual design work, to clarify the design concept. The purpose of this image catalogue was to communicate to the sales and manufacturing departments, in addition to the development team, the fact that an entirely new product, rather than a full model change, was being proposed in order to realize a “new style of mobility that simultaneously fits firmly within the Honda tradition.” It would also function as a shared tool indicating the design orientation of the product. The projected target users in the formulation of the image catalogue were an elderly married couple leading a stylish lifestyle in a resort in northern Europe. The wife had formerly been an interior designer, and the



Fig. 2 Image catalogue

couple preferred high-quality and tasteful items. This scenario was considered as symbolic of the “Quality Life” focused on in the design concept. (Fig. 2)

4. Features of the Design

4.1. A Design that Accentuates the “Smart Package”

The goal in developing the new Monpal ML200 was to create a vehicle that would be suited not only to users in hilly regions, which represents the largest market for the vehicle, but also to users in suburban areas. The realization of a “smart package” was therefore made the design focus. The width of the vehicle has been reduced by 85 mm against that of the previous ML100 to 595 mm, equivalent to the width of a bicycle⁽²⁾. This compact body helps ensure that the vehicle does not bother pedestrians, even when used on a sidewalk. The design aimed to display this “smart package” more effectively. One aspect of this was the front “cycle” fender. Separating the fender from the front of the body has made the body appear slimmer. The front fender also makes it easy for the user to see the angle of the front tires from their seat. Day by day, an electric cart will often be used on sidewalks with numerous obstructions and on the edge of roads with drainage channels, and the ability to judge the position of the front tires will contribute to preventing collisions and preventing the tires from leaving the road or sidewalk. (Fig. 3).

A “two-tone” color scheme has also been used to make the body look even more compact. This design idea originated in the desire to make the body frame, a structural part, into an aspect of the exterior of the vehicle. It was found that a two-tone color scheme made the design of the vehicle appear slimmer and more compact than a monotone color scheme. In addition, even if users select a dark color as the main body color, there is no change in the color of the side covers, and this bright silver (or bright grey) surrounding the entire body should make the vehicle more noticeable to pedestrians and drivers (Fig. 4).

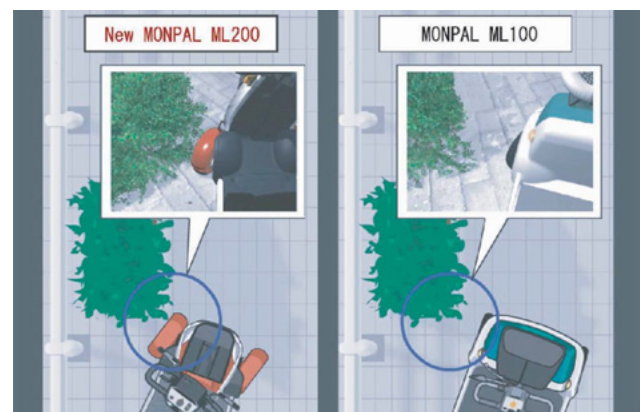


Fig. 3 Front fender

4.2. A Lovable Front “Face” Design

The majority of modern four-wheel scooters use a single headlight. The vehicles are sometimes not recommended for nighttime use; in Japan, a standard for the lights has not been clearly specified. In order to increase visibility, and due to the designers’ commitment to giving the vehicle a front “face,” two headlights (two “eyes”) have been employed in the ML200. The design concept was the creation of “a lovable front face.” It was felt that the realization of a design using human and animal faces as a motif would inspire a sense of “affinity” with the vehicle.

The use of two “eyes” on a four-wheel framework (which is similar to four legs), gives a sense that the vehicle looks like a living creature. Vehicles are products that inspire a greater sense of affection in their users than other manufactured products, such as white goods, etc. Some car owners even give nicknames to their cars. In addition, the anthropomorphization of motor vehicles is increasingly popular today, as seen in Disney movies. The use of the twin headlamp configuration gives the vehicle an affection-inspiring “expression” (Fig. 5).

4.3. Trapezoidal Form for a Sporty Feel and a Sense of Stability

In the first stage of the development process, the key sketch selected for the new Monpal ML200 did not give the impression of a vehicle with a top speed of 6 km/h, but rather of a vehicle giving a greater sense of speed. This was a result of the concept that the design should give the sense that the scooter was capable of sporty performance, a characteristic that is representative of Honda vehicles.

In addition, the use of front and rear suspension as a chassis technology to absorb impact and vibration and provide a more comfortable ride provided static and dynamic stability, despite the narrow width of the vehicle⁽³⁾. A form that gave an impression of stability was also sought. Specifically, the “wide stance” trapezoidal

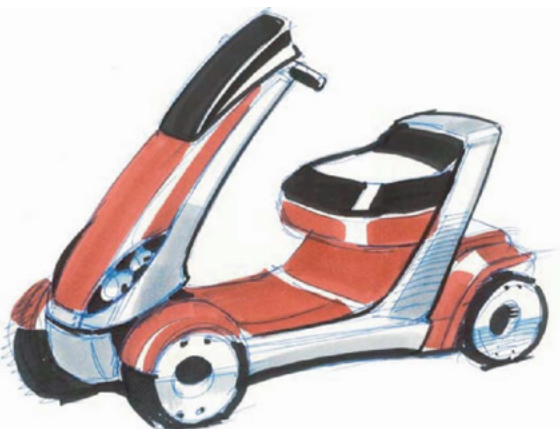


Fig. 4 Conceptual sketch of two-tone body color

form used in automobile design was the design target here. The four tires firmly grip the ground, while the upper section is tapered to produce a lower center of gravity and sense of stability (Fig. 6). In addition, in the Monpal ML200, the design team succeeded in making the center of gravity appear lower by increasing the width of the upper surface of the rear fender that covers the rear tires.

4.4. Honda ASV-3 LONG Design

The new Monpal ML200 incorporates the LONG technology employed in the advanced safety research vehicle, the Honda ASV-3. Specifically, this means that reflectors have been placed on the wheel cover (in the deluxe version) or low on the side cover (in the standard version).

LONG (Longitudinal Oriented Normative temporal Gap compensate) design attempts to make it easier for drivers and pedestrians to perceive the distance to the vehicle by employing lights (reflectors) positioned low on



Fig. 5 Front face design



Fig. 6 Honda CIVIC (1983) Low centre of gravity.

its body. By emphasizing the points of connection with the ground, it increases visibility at twilight and night⁽⁴⁾.

Figure 7 shows the effect of the law of perspective; the greater the vertical distance from the horizon of the target object within the line of sight, the closer it appears. On the left side of Fig. 7, when $a > b$, object A appears to be closer than object B. On the right side of Fig. 7, the distance to scooter A, provided with lights closer to the ground, can be judged more accurately than the distance to scooter B, that uses a light positioned further from the ground.

In addition, increasing the number of lights and positioning them higher on the scooter increases the rate of recognition of the vehicle, by car drivers, etc.

4.5. Control Panel Design

The control system used in the new Monpal ML200 is a more evolved version of the ML100 system. At the conceptual stage, the idea of using a horizontal bar handle like a bicycle was considered, but loop handles and lever operation for going forward and stopping are standard in four-wheel scooters, and it was judged that the employment of this type of system would enable users to feel comfortable and familiar with the controls when changing to a new scooter. The advancements made in the new control panel include the use of larger letters and different colors to increase the visibility of the display panel and make it easier for users to read. Messages such as "Park brake on" and "Charge battery" are displayed only when necessary, making the display simple and easy to understand. In addition, changes over time have been considered, and the speed setting dial and forward/reverse switch do not have printed indications but use double molding, ensuring that they are not only functional, but will maintain the attractiveness of their design over the long term (Fig. 8).

4.6. Seat Design

The basic framework of the seat employed in the Monpal ML100 was used as the base in designing a seat

for the new model, and sought a design that provided increased user comfort (Fig. 9). The height of the backrest was increased by approximately 30 mm against that of the ML100, increasing the degree of support provided to the user. The materials used in the urethane cushion, as well as the thickness of the cushion, were modified to make sitting more comfortable. A covering offering a sense of luxury has been employed on a base color of black. A constantly flashing LED lamp (in the deluxe version) or a reflector (in the standard version) has been employed in the seat back, while reflectors and blinkers have been employed at the side of the scooter, in order to increase visibility from the side and the rear. The deluxe version also features a swivel seat that increases the ease of getting on and off the scooter, in addition to an armrest that can be lowered into position.



Fig. 8 Design sketch of control panel



Fig. 9 Design sketch of seat

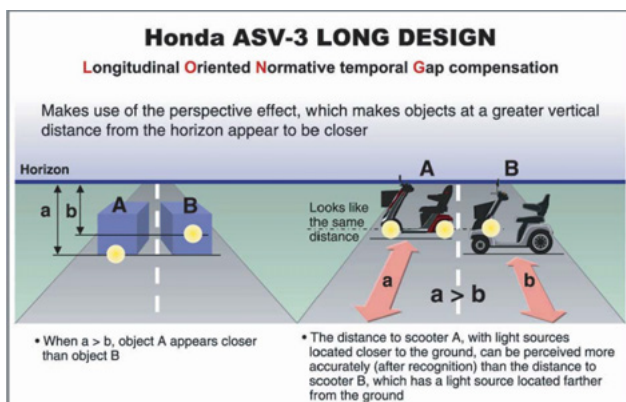


Fig. 7 Honda ASV-3 LONG design

5. Conclusion

The new Monpal ML200 (Fig. 10) has been extremely well-received by the design world. In addition to receiving a Good Design Gold Prize in the Good Design Award 2006 held by the Ministry of Economy, Trade and Industry, it was selected for Vol. 8 of the Design Museum Selection of the Japan Industrial Designers' Association (JIDA). The evaluation of the Good Design Award judging committee was as follows:

Motorized carts in the field of assistive carts and senior mobility have tended to emphasize function over form. Finally there's a vehicle that bespeaks a commitment to



Fig. 10 External view of new MONPAL ML200

design quality and appeals to our senses. In short, the designers have succeeded in creating a smartly appointed cart while upholding a development concept of setting a new standard in mobility in the Honda tradition. The Monpal's refinements ensure that it easily meets expectations as a member of the Honda line. With a body as narrow as a bicycle, a low rear fender imparting stability, an attractive visage, and universal-design-inspired features, including highly visible wheels and indicators, this four wheeled scooter promises to be popular in many contexts, not only for active seniors but also as a new form of neighborhood transportation⁽⁵⁾.

This is the type of praise that the new Monpal ML200 has received from the design world since its introduction. But the vehicle has also been evaluated highly for its characteristics as a "product," the superior functions and basic framework that provide satisfaction to its users. Looking towards the advent of an aged society, Honda will continue to develop products that meet the company's high standards, based on its mottos "Fun for Everyone" and "Safety for Everyone," in an attempt to spread happiness by offering products that benefit their users.

References

- (1) Honda, S.: Honda Soichiro Yume wo Chikarani Watashi no Rirekisho, Nikkei Inc, p. 218 (2001) (in Japanese)
- (2) Hosaka, J., Inui, T., Maesaka, K.: Development of a 4-wheel electric wheelchair-MonPal ML100, HONDA R&D Technical Review, Vol. 12, No. 1, p. 21-26
- (3) Ichikawa, K., Hirose, Y., Yamamoto, T., Yamagishi, Y., Ishikawa, T.: Development of Monpal ML200 4-Wheel

Scooter, Honda R&D Technical Review, Vol. 18, No. 2, p. 28-35

- (4) Kushida, K., Katayama, M., Tsutsumi, Y., Maruyama, K., Kamata, Y., Murata, Y.: Introduction of Honda ASV-3 (Motorcycles), Honda R&D Technical Review, Vol. 18, No. 2, p. 13-20
- (5) Japan Industrial Design Promotion Organization: "Japan Design" GOOD DESIGN AWARD YEAR BOOK 2006-2007, p. 18-21

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