Stroom Electric Motorcycle Body Design

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Abstract. Urban areas become one of the highest motorcycle users with urban people who tend to be more open to new things such as technological advances and environmental concerns, so they can follow the development process of electric motorcycles well. Things that need to be considered in this design are the aspect of form and design so that the product has a selling point and competitiveness with competitors of conventional motors. Design development should pay attention to the characteristics, functionality, and convenience so that the product can be more easily accepted by urban communities. Thus, this research aims to redesign the motorcycle body design with the urban concept with high capability and cruising. Research methods using qualitative methods and develop a theoretical basis tailored to the design. The result of this research is to produce a motorcycle body design with an urban concept able to penetrate the local market with an unusual design style. The modern concept of design and sturdy results of collaboration became the basis for the creation of the stroom electric motor, to be able to enliven the local automotive industry market, with a design style that is different from the others, of course, this makes the attraction of stroom motor users.

Keywords: Design, Electric Motorcycle, Stroom, Body Design.

1 Introduction

Design is a process that can be said to have been as long as the existence of humans on Earth. This is often not realized by us. As a result, some of us think as if the new design is known since modern times and is part of modern life. In everyday language, the word design is often interpreted as a design, plan, or idea. This kind of understanding is not entirely wrong but also not entirely correct. In the Big Indonesian dictionary, it is said that the design is commensurate with the word design. However, the word design/design or design that is often paired with the word design does not seem to be able to interpret the design more broadly. The word "design" which is a new word that is the Indonesian peng-an of the word design (English) is retained. The word design is shifting

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the word design because the word cannot accommodate the activities, science, breadth, and prestige of the profession or competence [1].

Based on the above definition, it is clear that design is not merely a design on paper, but also the overall process until the work is realized and has value. The design does not stop at ketas, but it is a practical activity that includes economic, social, technological, and cultural elements in its various dynamics. Based on the above definition, it is clear that design is not merely a design on paper, but also the overall process until the work is realized and has value. The design does not stop at paper, but it is a practical activity that includes economic, social, technological, and cultural elements in its various dynamics [1].

The design of electric vehicles is growing rapidly, and various efforts are being made to follow this global trend, accompanied by government support from building a lithium battery factory in South Sulawesi, reducing the cost of entering vehicles to reducing electric vehicle taxes. In 2025, the government targets 20% of vehicles produced in Indonesia to be electric, which means that if the production of vehicles is 2 million per year, 400 thousands of them are electric engines. In Indonesia, electric motors are not as popular as electric cars. Recorded in 2020, various well-known brands have enlivened the latest electric vehicle market in Indonesia. This means that the demand for electric vehicles in Indonesia is very large. Given the increasing motorcycle sales in Indonesia, it does not demand the possibility of electric motor opportunities to develop very largely, especially in urban areas. Urban people are usually more up-to-date with technological developments and care about environmental friendliness so electric motors are more acceptable [2].

Consumer behavior towards the intention to buy an electric motor affects the decision to think as a consideration before buying [3]. Safety and reliability are the aspects that affect the ergonomic aspects of the design of electric motors. These aspects discuss how to design an electric motorcycle body with the shape and character of today's electric vehicles. Comfortable and safe driving aspects that can drive on roads with rocky contours and puddles. This research will be focused on the manufacture of an electric motorcycle body design, changes from the previous body design volta with code 402, modern look design, and robust styling, following the design of urban communities.

This research is a collaboration between Telkom University and PT. Volta is expected to produce an electric motorcycle product that is fresher and more interesting. The design and shape of the electric motor model must pay attention to the basic design aspects that depend on the needs of the product itself. Design aspects are analyzed based on the needs of users of primary and secondary products. The ergonomic aspect goes into the primary aspect. The Shape of the motorcycle is adjusted to the design trends of today's electric motorcycle and urban conditions in Indonesia that live practically. This study will design the body electric motorcycle following the concept of urban communities to increase the selling value and competitiveness to increase interest in the use of electric *motor sepedah*, involving students and lecturers of Telkom University product design in its realization, as a form of appreciation and support from Telkom University Partnership program, designing electric *motor sepedah* body design as a refresher form of the previous design volta 401.

2 Method

The method of data collection to be performed is a qualitative method that is supported by quantitative data. The results of the data will be analyzed which includes analysis of the shape, material, color, and completeness of the motorcycle and SWOT. Then produce a synthesis that becomes the initial concept of an alternative design that is developed again into the final design, based on the criteria that have been selected and some sources that are very influential in the design. So, it can be said to be perfect. Here is the mapping method of stroom body design research see in Fig. 1.

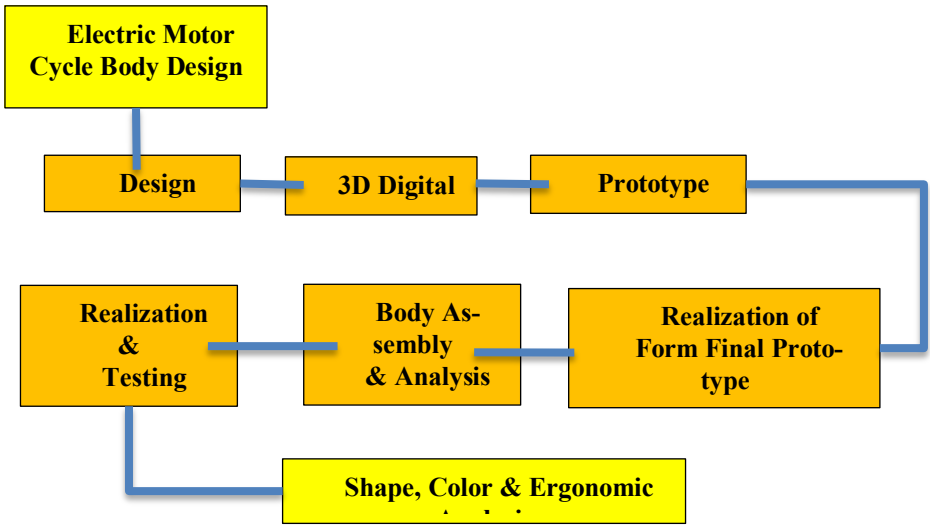

Fig. 1. Research Mapping Methods

3 Results and discussion

The design concept chosen in the design of the body of the electric motor stroom is robust, compact, and solid, of course, this is the basis of the design, so the character [4]. Here are the initial stages of the design concept by adopting some form of design of the products designed by designers abroad as the basis for the idea and character of the design style robust, compact, and bolt.

Design Fig. 2 we can see that the form taken is a dynamic and clean design concept, this is a design that is a trend this year, thus providing different and fresher design results. The appearance of the design sketch drawing with the concept of robust, compact, and solid, the results of manual sketches as the basis for the form before entering the digital image, which is more detailed and adjusts the character of the design to be applied, Of course, this is a benchmark that the selected design is based on the design concept. As a basis for strengthening the design concept selected based on several

things, both in the theme and reference design from various sources, both domestic and foreign, as well as the user character of the electric motorcycle of today.

Fig. 2. Design concepts and sketches. Source: The work of researchers

Art is the creation of symbolic forms of human feelings. The transformational form of the symbol is the universalization of experience and is not a translation of a particular fragment in his art but rather the formation of his emotional experience that is not of the mind alone. Things to do considered in drawing sketches is visual legibility as it is necessary to pay attention to the elements and principles of art and design so that it will show a good visual [5]. below are the results of the sketch image using a digital image of the model of the Stroom electric motorcycle design.

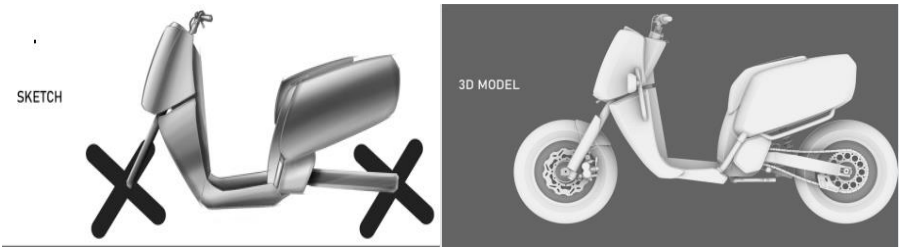

Fig. 3. Design sketches and Digital 3D models. Source: The work of researchers

The position of the sketch in the creative process, the sketch is done at the beginning of the design work (Fig.3). If the creativity is in the non-visual field, the sketch is a record of the idea/description of the idea, if it is in the visual field, the idea will be forwarded to a sketch or rough picture that needs to be evaluated by other considerations such as visual aspects, material aspects, ergonomic aspects, system aspects, and others [6]. The results of the sketch go to the final stage, namely the digital model as the basis for the shape and also determine the proportionality of the electric motorcycle

so that it can be achieved related to the dimensions of the shape, as a guideline in making patterns when the design modeling process is carried out so that there will be benchmarks and shape guides based on the design concept that has been selected, although not 100% can match the image, but at least when the process is not out of the design concept that has been made. Here's a comparison of the results of digital image design and prototype model.

Fig. 4. Final Digital 3D Model and shape Modeling. Source: The Work of Researchers

Fig. 5. Realization Of Prototype Form. Source: The Work f Researchers

Fig. 4 show the 3D modeling refers to the process of creating a three-dimensional representation of an object using the software. These representations, called 3D models, can convey the size, shape, and texture of objects, and shape designs that have not been

created in real life. After the digital modeling stage is completed, proceed to the prototype model (Fig. 5). The Shape of this stage is processed using modeling materials such as rigid foam and PVC board that can be processed and shaped easily by manual and sanding techniques and cutting using cutters and other tools, continue the caulking process as the final result to strengthen the modeling stage so that the shape can be achieved with precision and detail. This stage is the basis of the modeling process as the final result of the formation, if this stage is not done carefully and carefully, it will affect when it will be duplicated or printed as a master model with composite materials. The next stage of the process of detailing the shape using either a sticker or other small parts to add to the impression of a perfect motor body, as well as painting is the final stage, with color choices according to the character of the electric motor.

4 Conclusion

This electric motorcycle is a vehicle that uses 100% electrical energy as a power source and has advantages, in terms of efficiency, maintenance, and engine potential, so that in the long term and the development of electric motorcycle technology can compete with fossil fuel vehicles. This electric motorcycle is designed for urban communities that tend to follow the development of technology with adjustments to the urban community itself, especially in Indonesia.

Electric motorcycle body design that is suitable for urban mobility has a robust, compact, and bolt design model. This study used primary and secondary data collection methods, and design analysis. This study only makes the design of the electric motorcycle body, for electrical systems using the engine of the Volta 401 model from a grant from PT Volta industry, as a collaboration in product development with Telkom University. The design of electric motorcycles is expected by many people who switch to using electric motorcycles for everyday mobility.

References

1. Adhi, Nugraha. 1989. *Desain produk, pengertian dan ruang lingkupnya*. Jakarta: Erlangga.
2. Aulia putri pandamsari, and lokadata.id. n.d. *"Pengembangan Sepeda Motor Listrik."*https://lokadata.id/artikel/pengembangan-sepeda-motor-listrikterganjal-pandemi.
3. Abdul Majid Ahmad Zuhairi, Shaari Nazlina., *Design Strategy for Designing a Service in Malaysia*, International Service Innovation Design Conference Hakodate, Japan, 2010.
4. H.Bahalwan, "Kajian Psikologi Desain, Desain Interface Speedometer Sepeda Moto Metik,Tentang Pengaruh Cara Orang Berkendara," J. IPTEK, vol. 22, no. 2, pp. 77–86, 2018.
5. Palgunadi, Bram. 2016. *Desain Produk 1 Desain Desainer dan Proyek desain*. Bandung.Penerbit ITB.
6. R. Ginting, Perancangan Produk, Graha Ilmu. Yogyakarta, 2010.
7. Solihin, Olih. 2015. *"Terpaan Iklan Mendorong Gaya Idup Konsumtif Masyarakat Urban."*Jurnal Ilmu Politik Dan Komunikasi Volume V N (2): 41–50. https://repository.unikom.ac.id/30951/1/jurnal-4.pdf.