ABSTRACT

The development of two-wheeled electric vehicles is growing rapidly in Indonesia. One of the electric vehicles that has a lot of interest in the market is the electric motor because it has low operating costs and minimal maintenance. Electric motors have three main components, namely the motor, controller, and battery. One of the important components of an electric motor is the battery. The battery serves as the main source of energy used to operate the entire electronic system of the electric motor. The design of the battery case is also very important because it functions as a battery protector. Initial conditions show that the initial design of the battery case still requires a lot of assembly and installation processes. Therefore, this research is expected to provide a design improvement proposal for the battery case using the Design For Manufacturing And Assembly (DFMA) method to minimize the number of assembly and installation processes for the electric motor battery case. This research aims to analyze and develop a C70 electric motorcycle battery case design using the Design for Manufacturing and Assembly (DFMA) approach. The results showed that the new design successfully reduced the total process time from 6961 seconds to 3198 seconds, as well as reduced waste from 20 grams to 11.5 grams, which reflected a reduction of 54% and 42.5%, respectively. In addition, the total production cost was also significantly reduced from Rp116,062 to Rp55,294, resulting in cost savings of up to 52.3%. Design improve not only increases efficiency in the manufacturing and assembly process, but also offers a more environmentally friendly and economical solution. This research is expected to contribute to the development of more efficient and sustainable electric vehicles, and become a reference for further research in the field of industrial and automotive engineering. Suggestions for further research include prototype testing and exploration of the use of more innovative alternative materials.

Keywords: *Battery Case, DFMA, Electric motor, Improvement.*