

ABSTRACT

In the current era, electric vehicles, particularly electric motorcycles, are increasingly chosen as an efficient and environmentally friendly means of urban mobility. However, electric motorcycle users often face challenges related to limited battery capacity and a lack of charging infrastructure. Charging stations have become an essential solution to meet the power needs of electric motorcycles. Nevertheless, the power usage at charging stations is generally not directly controllable by users, necessitating a system capable of managing and overseeing the charging process. By applying Internet of Things (IoT) technology, users can easily control and monitor charging stations in real-time. This research focuses on developing a more efficient, easy-to-operate, and environmentally friendly charging station using energy from solar panels. The system developed utilizes renewable energy, where solar energy is converted into electricity through solar panels and stored in batteries for electric motorcycle charging purposes. The development includes designing a charging station equipped with an IoT-based control and monitoring system to enhance convenience and flexibility in the charging process. The system implementation involves integrating solar panels, storage batteries, and IoT devices to enable real-time monitoring and control. Testing is conducted to evaluate system performance, including monitoring control reliability, charging efficiency, and analysis of the output power generated. The results of the study indicate that the developed charging station system can provide a more efficient and sustainable charging solution for electric motorcycles, with performance that can be optimized through IoT technology.

Kata Kunci: *Charging Station, electric motorbike, Internet of Things (IoT)*