

ABSTRACT

Electric vehicles are becoming an increasingly popular topic as many fossil fuel vehicle users switch to electric vehicles. This means that electric vehicles will increase rapidly until 2024 and will be in great demand by the public. The battery is the main source of electric vehicles, so it cannot be separated from the charging process. Problems with batteries are usually caused by improper use and the battery is not equipped with a protection system which results in the battery being in conditions such as overcharge and overdischarge. Considering that the charging system via charging stations still uses the plug-in method, it still has shortcomings.

The design of a tool for monitoring battery charging and discharging using Wireless Power Transfer (WPT) based on the Internet of Things (IoT) system aims to maintain the condition of the battery when charging and discharging dynamically. Apart from that, it can help vehicle users to increase the distance traveled and time of the vehicle so that it lasts longer when used, and eliminate the user's anxiety about driving distance if the vehicle is far from the charging station location.

Then, with research results showing that using 3 wireless chargers to extend the lifetime of an electric vehicle battery has a significant effect, up to twice than of not using a wireless charger, which is around 1 hour 3 minutes, Then, the research results show that using 3 wireless chargers to extend the lifetime of an electric vehicle battery has a significant effect, up to twice that of not using a wireless charger, namely around 1 hour 3 minutes. With a minimum current of 0A, a minimum voltage of 6.4V, a minimum power of 0W is obtained with an average power of 0.042W for the wireless A combination, 1.09W for the AB wireless combination, and 2.09W for the ABC wireless combination. QoS testing consists of bandwidth for download of 34 Mbps and upload of 19 Mbps, then throughput of 27.48kbit/s which means it has a 'bad' index, then packet loss of 0.17% which means it has a 'very good' index, Delay of 5.12 ms which means it has a 'very good' index, jitter is 5.09 ms which means it has a 'good' index.

Keywords: *Electric vehicles, WPT, IoT, charging, discharging and wireless charging*