

ABSTRACT

Electric vehicles are vehicles that use one or more electric motors or traction motors as their driving force to operate by utilizing electricity as a power source. The disadvantages of EVs are limited battery capacity and SPKLU (Public Electric Vehicle Charging Stations). The purpose of this study is to develop wireless power transmission, also known as Wireless Power Transmission (WPT), which is the process of sending electrical energy from a power source to an electrical device without requiring the use of cables as a physical channel. Several wireless power techniques are known in the field of wireless communications. However, the Inductive Wireless Charging (IWC) method with inductively coupled coils can supply power to the receiver very efficiently with very little radiation loss. With resonantly coupled coils, even though the secondary coil is weakly coupled to the primary coil, power can be transmitted very efficiently. Therefore, coil design needs to be considered in the manufacturing and calculation process, where in this inductive method the coil is used to send and receive power. Poor coil design will make the power distribution process less than optimal, especially if done with the Dynamic Wireless Charging Station (DWCS) method.

This study found that the efficiency of the DWCS method from previous studies obtained results of 1.4% then in the study it increased by 2.3%, and the Static Wireless Charging Station (SWCS) method in previous studies obtained a value of 7.65%, then in this study it increased by 62.24%. Based on this study on recharging electric vehicles, this final project will discuss wireless charging that focuses on coil design to increase the level of wireless charging efficiency so that this system can provide maximum contribution to optimizing the performance of electric vehicles, as well as making electric vehicles safer and more comfortable for users in running conditions.

Keywords: *Coil Design, Dynamic Wireless Charging Station (DWCS), Electric Vehicle (EV), Inductive Wireless Charging (IWC)*