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On-Road Efficient Wireless Charging System for Electric Vehicle

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Abstract: *With the growing popularity of Electric Vehicles (EVs), the need for a simple and robust charging scheme has become necessary. Consumers are dissatisfied with the typical recharging method at home or in station parks because it takes a long time to recharge. On a highway, waiting for a place to recharge the vehicle is not always a good idea. The super-fast recharge station has received positive feedback from drivers in terms of charging time; nevertheless, this is not always recommended, particularly in terms of battery security and durability. WPT (Wireless Power Transfer) technology has many inherent advantages over traditional means of power transfer. It has been proposed for use in a wide range of applications, ranging from low power biomedical implants (several watts) to electrical vehicle chargers (several kilowatts) to railway vehicles (several megawatts), with efficiency up to 95% or higher in some prototype systems. Capacitive coupling, magnetic coupling, frequency resonance matching, microwaves, lasers, and ultrasound waves are all methods for transferring electric power across a specified distance through air. However, resonant magnetic coupling appeared to be the most practical and promising method to date, with resonant magnetic coupling being used in the majority of medium to high power WPT systems constructed to date. In this project, a wireless charging system for lightweight electric vehicle is designed, built and tested. The problem with electrical vehicles is that it requires too much time to recharge the battery. Dynamic Charging could be the much anticipated concept that replaces the conventional method of charging of battery and reduces the time taken to change the battery. A solution to directly charge EVs as they travel along the highway will eliminate the two biggest barriers, travelling range anxiety and cost. This project is carried out using MATLAB Simulink software for simulation of the circuit. This project based on future infrastructure of EV's technology.*

Keywords: Wireless Charging, Electric Vehicles, Wireless Power Transfer, Magnetic Coupling.

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