

Review Paper on Dynamic Wireless EV Charging using Embedded Road Coil

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Abstract: *The increasing adoption of electric vehicles (EVs) marks a major step toward clean and sustainable transportation. However, the dependency on stationary charging infrastructure and long charging durations limit the practical usability of EVs. This paper presents an innovative approach to Dynamic Wireless Electric Vehicle Charging (DWPT) using Embedded Road Coils, which enables vehicles to charge while in motion through electromagnetic induction. The proposed system utilizes transmitting coils embedded under the road surface and a receiving coil installed beneath the vehicle. The design integrates a high-frequency inverter, resonant tank circuit, and Arduino-based control unit to ensure stable and efficient energy transfer. A prototype was developed to validate the concept, achieving up to 70% power transfer efficiency across a 2–5 cm air gap under dynamic conditions. The project demonstrates the feasibility of continuous and contactless charging for electric vehicles, thereby reducing battery size requirements, eliminating charging downtime, and supporting the future development of smart transportation systems and green mobility infrastructure.*

Keywords: Dynamic Charging, Electric Vehicle, Wireless Power Transfer, Embedded Road Coil, Arduino, Resonant Coupling

