

Dynamic Inductive Wireless Power Transmitter System with a Power Transmitter Module

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Electrical and Computer Engineering

Abstract

The Dynamic Inductive Wireless Power Transmitter System achieves load-independent transmitter coil current and exhibits high tolerance to mistuning caused by changes in component values. It supplies power distribution to numerous transmitters in large-scale DWPT roadway systems.

Problem

In large-scale charging systems for EVs, construction tolerances are present. Variances in the electronics can cause the system to operate undesirably, thus requiring measures to ensure the charging systems operate in all conditions.

Solution

This innovation introduces a circuit topology for a wireless power transmitter module. It enables more precise control over the system's frequency response, allowing for enhanced customization to meet specific performance requirements.

Value Proposition

This innovation solves the problem of integrating large scale roadways by maintaining precision in the roadway even due to fluctuations and high tolerance mistuning. It also reduces overall cost and complexity of the system.

Benefit

Wireless power transfer technology has been integrated into road systems to charge electric vehicles while in motion on roads or highways. These electrified roadways can charge multiple vehicles simultaneously. In large-scale electric-vehicle charging systems, construction tolerances are present in the electronic circuits due to the systems' mass-production requirements. Variances in the electronics can cause the system to operate inefficiently, thus requiring additional innovation to ensure the large-scale charging systems operate as expected in all conditions (weather, weight fluctuations, etc.)

The proposed innovation adds an inductive component to the charging system, enabling greater design customization to ensure the system operates as expected. It is embedded in the road and transfers the electric current to the vehicle. Proper system operation will occur even with extreme construction tolerances in a large-scale charging system due to the additional circuit component. This innovation introduces a novel circuit topology for a wireless power transmitter module. It enables more precise control over the system's frequency response, allowing for enhanced customization to meet specific performance requirements.

This innovation solves the problem of integrating large-scale roadways. It maintains precision on the roadway despite fluctuations and high-tolerance mistuning. It also reduces the overall cost and complexity of the system.

Market Application

The Electric Power Transmission market, more specifically the Dynamic Wireless Power Transfer (DWPT) market, is

well-suited to this technology. Industries involved in road construction and manufacturing wireless power transmitter systems for these roads would find this useful.

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Intellectual Property

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