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A Rail-Rung System for Installation of a 3-phase Dynamic Wireless Power Transfer Transmitter in a Roadway

The rail-rung based system for 3-phase Dynamic Wireless Power Transfer (DWPT) transmitters offers in-road wireless charging for electric vehicles through precise coil winding placement and a minimized physical profile.

Dynamic Wireless Power Transfer (DWPT) systems offer a solution to both electric vehicle "range anxiety" and the need for expanded charging infrastructure, as vehicles could be wirelessly charged while driving on a roadway. However, DWPTs face challenges associated with maintaining tolerance of the transmitter's phase windings as well as minimizing the amount of road surface covering the transmitter while ensuring that there is sufficient surface material to preserve the integrity of the roadway. Researchers at Purdue University have developed a rail-rung based system for 3 phase DWPT transmitters that alleviate these issues. By implementing a rigid framing system, the phase windings can be precisely installed during the construction of a roadway. Purdue's approach also minimizes volume by ensuring that no more than two windings overlap at once. This technology has applications in the adoption of electric vehicles and the modernization of roadway infrastructure.

Advantages

-In-road wireless charging of electric vehicles

-Precise placement of coil windings within the roadway

-Minimized profile and volume

Applications

-Electric vehicle & charging infrastructure

-Roadway modernization

-Green technology

Technology ID
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Category
Automotive & Mobility
Tech/Battery Management & Charging Technologies
Buildings, Infrastructure, & Construction/Structural Health Monitoring
GreenTech/Environmental Remediation & Pollution Control

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Technology Validation:

This technology has been validated through simulations and design of a small-scale prototype system.

TRL: 3

Intellectual Property:

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