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Dear Prof. Yijie Wang and Prof. Chris Mi

Guest Editors in IEEE Transactions on Power Electronics

We would like to submit the enclosed manuscript entitled “Self-Controlled Switchable Current Sharing Path for Multi-Receiver Wireless Power Transfer Systems” which we wish to be considered for publication in IEEE Transactions on Power (Special Section on Advanced WPT Systems with High Efficiency and Misalignment Tolerance Characteristics). The paper is an original piece of work and it has not been published in whole or in-part previously, and not under consideration for publication elsewhere.

In high-power industrial applications, the development of wireless power transfer (WPT) systems has progressed since they provide portability, safety, and reliability. For this aim, modular structure in WPT systems gains popularity to both increase the power ratings and misalignment tolerance. However, modular systems also introduce a power-sharing issue between the modules (Tx or Rx). Conventionally, the current sharing path method can solve the unbalance, but the circulation current is increasing to dangerous levels in cases of strong misalignment and fault.

This paper introduces a new current balancing method for multi-Rx systems that is powered and controlled by the induced voltages of Rx coils without an additional controller and gate drive circuitry to create a switchable current-sharing path between receiver coils. Thus, the efficiency of the system is increased by the proposed method in fault and strong misalignment compared to the conventional system. Furthermore, the system fault tolerance is increased by disconnecting the current sharing path. In short, with the proposed method, a modular system, which can be scaled according to the desired power level, can be achieved, which is misalignment-tolerant.

The paper is composed according to IEEE journal submission format. No conflict of interest exists in the submission of this manuscript, and manuscript is approved by all authors for publication.

I appreciate your consideration of our manuscript, and I look forward to receiving comments from the reviewers.

Kind regards,

Ozan Keysan