IEEE TRANSACTIONS ON INDUSTRY APLLICATIONS

Special Issue on

Advanced and Emerging Technologies of High-efficiency and Long-distance Wireless Power Transfer Systems

Wireless power transfer (WPT) shows many appealing features including galvanic isolation, weather proofing, no mechanical wear, convenience and flexibility. Owing to these advantages, it has been employed in some commercial products such as smart cell phones, tablet computers, Bluetooth headsets, sweeping robots, and LED desk lamps. WPT is expected to be employed in many other fields for different reasons. To reduce the risk of infection, it could be employed in biomedical implants; to prolong the service life, it could be employed in the rotating electromechanical equipment; to eliminate the range anxiety, it could be employed in dynamic electric vehicle charging; to simplify the waterproofing design, it could be employed in autonomous underwater vehicle. Although WPT technology has achieved great progress in the past three decades, the problems of low power transfer efficiency with large gap and misalignments, highly constrained operation freedom, large electromagnetic field with high output power, unreliable wireless communication, electromagnetic compatibility issues and limited traveling speed of dynamic charging electric vehicles are hindering the further development of WPT technology.

Recently, the researchers and engineers are striving to employ WPT technology into other fields, e.g., imaging satellites, autonomous underwater vehicles (AUV), wind turbines, industrial robots, high-voltage power transmission lines. These emerging applications have some special requirements on WPT systems, for example, strict limitation of leakage flux, significantly enhanced misalignment tolerance, ultra-high power density, highly reduced volume and weight, very high transfer distance. This results in many new challenges for both academia and industry.

Editors invite original manuscripts presenting the latest advances and developments on WPT. Particularly, studies of WPT systems for emerging applications are expected. Topics of interest include, but are not limited to:

- Inductive power transfer (IPT), capacitive power transfer (CPT), ultrasonic wireless power transfer (UWPT), and microwave wireless power transfer (MWPT) technologies
- Magnetic couplers and magnetic design methods
- Compensation topologies and parameter tuning methods
- Advanced control methods for electric vehicle dynamic charging systems
- Electromagnetic field shielding and electromagnetic compatibility
- Simultaneous wireless power and data transfer technologies
- Foreign object detection technologies
- Systematic efficiency improvement methods

- Misalignment-tolerant wireless power transfer systems
- High distance-to-diameter ratio wireless power transfer systems
- Multiple transmitters and Multiple receivers wireless power transfer systems
- Wireless power transfer systems for aerospace and underwater applications

Submission Guidelines

Authors who wish to submit a paper for consideration must submit an extended abstract (2-page, free format, PDF version) to Prof. Yijie Wang identified below.
Authors who submit an accepted abstract will receive a formal invitation with detailed instructions for submission of the complete manuscript to the IAS ScholarOne Manuscripts site.
Refer to http://www.ias.org for general information about electronic submission through ScholarOne Manuscripts. Manuscripts submitted for this Special Issue will be reviewed separately and will be handled by a Guest Editorial Board.

Important Deadlines (Tentative)

- 31-December-2020: Deadline for extended abstract submission.
- 11-February-2021: Deadline for notification to invite full paper submissions.
- 10-March-2021: Deadline for full paper submission for review in S1M.
- 8-September-2021: Deadline for notification of final decision.
- 6-October-2021: Deadline for submission of Final Files in S1M.
- Jan/Feb 2022: Publication on the IA Transactions.

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