

Special Section on:

Emerging Multi-Port Electrical Machines and Systems

DISTINCT FROM the conventional electrical machines with only one electrical and one mechanical port, machines featuring multiple electrical/mechanical ports provide a highly-efficient, compact, and flexible manner to convert and/or transfer energies among different ports. Though relatively young, they have experienced rapid developments during the past decade in terms of available topologies, analysis and design techniques, and control strategies to meet the needs of power conversion, transfer, splitting or recovery in a wide range of applications, such as EV/HEV, high power industrial drive, rail transportation, reliable wind turbine systems, and AC/DC-micro-grids, and so on. Substantial knowledge on this topic has been generated and the time is ripe to conclude the scattered research results in the past, to present advantages and disadvantages in an objective and fair manner, to clearly show the challenges encountered in putting them into practical use, and last but not least, to appraise their values in study of both theory and application. The multi-port electrical machines mainly include the dual-electrical-port machines (slip-ring doubly-fed induction machines and various brushless versions, dual-stator-winding induction machines with similar or dissimilar poles, dual three-phase PMSMs, and so on) and the dual-mechanical-port machines. Extended configurations, like the dual-motor drive systems, are also considered.

Editors invite original manuscripts presenting recent advances in these fields with special reference to the following topics:

- ✓ Updated design and optimization methods considering the multi-port feature
- ✓ Multiphysics coupling analysis with an emphasis on structural reliability and thermal design
- ✓ New methods for integrated modeling, analysis and control
- ✓ Performance evaluation in specific application scenarios
- ✓ New topologies with competitive torque/power density and efficiency
- ✓ Advanced control strategies considering practical deployment
- ✓ New applications of multi-port electrical machines and systems
- ✓ Other related topics

Manuscript Preparation and Submission

Check carefully the style of the journal described in the guidelines “Information for Authors” in the IEEE- IES website: <http://www.ieee-ies.org/pubs/transactions-on-industrial-electronics>.

Please submit your manuscript in electronic form through: <https://mc.manuscriptcentral.com/tie-ieee/>.

On the submitting page, in pop-up menu of manuscript type, select: “**SS on Emerging Multi-Port Electrical Machines and Systems**”, then upload all your manuscript files following the instructions given on the screen.

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Timetable

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