

Call for Papers

IEEE Journal of Emerging and Selected Topics in Power Electronics

Special Issue on Partial Power Conversion and its Emerging Applications, 2020

Scheduled Publication Time: June 2021

For a 100% renewable energy future, power electronic converters play a more and more critical role in such as smart grids, transport electrification, lighting, data centers, etc., with respect to efficiency improvement, cost reduction, reliable operation and power density enhancement. The so-called partial, fractional, or differential power processing technologies refer to the fact that power converters only process a fraction of the total power of a system, and hence have attracted significant attention. Reducing power rating of power electronic devices, converters and systems, high efficiency and high-power density can be achieved and thereby obtains small, lightweight and low-cost power supplies. So that, in recent years, this technology has been widely used in applications of photovoltaics, energy storage, hydrogen production and datacenter power management. However, the special system configuration of partial (or fractional/differential) power conversion brings new challenges such as large voltage variation, lack of galvanic isolation, reliability, electromagnetic coupling, etc. Given that, new topologies, passive and active devices, PWM schemes, system modeling techniques, control strategies, protection schemes and many aspects need deep and comprehensive investigation, as well as impacts of partial (or fractional/differential) power conversion on the existing or new hybrid renewable/clean energy systems are to be studied. Finally, the metrics of its performance composed of conversion efficiency, power density, adaptability to a variation of energy sources, loads, etc. need to be investigated and optimized effectively. Prospective authors are invited to submit original contributions, or survey papers or tutorials, for review and publication in this special issue. Topics of interest include, but are not limited to:

- New dc-dc, ac-dc, dc-ac and ac-ac topologies of partial power conversion
- Isolated/non-isolated converter topologies with super-wide voltage gains
- Advanced modeling and control of partial power converters and systems
- Reliability, diagnosis and protection schemes of partial power converters
- Modulation schemes and methods for extreme high or low duty cycle operations
- Advanced hardware design of partial power converters
- Wide bandgap devices and their impacts on partial power converters
- Optimization schemes for partial power converters and systems
- Partial power processing in topologies such as resonant converters, charge-plump, switched-cap, etc.
- Applications to Data Center, V2G charger, LED drivers, Battery management systems (BMS), avionics etc.
- Applications to wind, solar power generation (PV), energy storage, hydrogen, dc transformer, micro-grid, etc.

All manuscripts must be submitted through Manuscript Central at <http://mc.manuscriptcentral.com/jestpe-ieee>. Submissions must be clearly marked “Special Issue on Partial Power Conversion and its Emerging Applications, 2020” on the cover page. When uploading your paper, please select your manuscript type “Special Issue.” Refer to <http://www.pels.org> for general information about electronic submission through Manuscript Central. Manuscripts submitted for the special issue will be reviewed separately and will be handled by the guest editorial board noted below.

Deadline for Submission of Manuscript: December 2020

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- April 2020
- December 2020
- March 2021
- April 2021
- June 2021
- Call for Papers to IEEE JESTPE Editorial Office
- Manuscripts Submission Deadline
- Final Acceptance Notification
- Manuscripts Forwarded to IEEE for Publication
- Special Issue Appears in IEEE JESTPE