THE 45TH ANNUAL CONFERENCE OF THE
IEEE INDUSTRIAL ELECTRONICS SOCIETY
OCTOBER 14-17, 2019
LISBON, PORTUGAL

Special Session on
“IMPEDEANCE SOURCE CONVERTERS: TOPOLOGIES,
CONTROL AND APPLICATIONS”

Organized by

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Call for Papers

Research in the field of Impedance Source Converters was initiated in 2002 by the invention of the Z-Source inverter. Z-Source inverters are able to provide buck-boost functionality by the single switching stage and improved reliability due to the inherent short-circuit immunity. These advantages urge active research in the field of Impedance Source Inverters. The impedance source technology was applied to all four basic converter types: DC-AC, DC-DC, AC-AC, and AC-DC. Impedance source converters are applied in a very broad area: from modern energy generation systems (renewable and alternative) to DC circuit breakers and electronic loads. To promote further research and development of impedance source converters and to provide a common environment for presentation and discussion on their emerging research, development, and applications, we propose a special session on the impedance source converter topologies and their applications.

Topics of interest include, but are not limited, to the following:
- New topologies of impedance source networks
- Multilevel and multiphase impedance source converters
- Impedance source DC-DC converters
- Impedance source DC-AC, AC-DC converters
- Impedance source matrix converters
- Control strategies of impedance source converters
- Design considerations for power and control stages
- Loss analysis and losses minimization methods
- Reliability issues
- Review and challenges on impedance source converters
- Applications of impedance source converters in electric drives
- Applications of impedance source converters in renewable energy and grid connected systems, such as in:
  a. Photovoltaic systems
  b. Fuel cell systems
  c. Wind turbine systems
  d. Energy storage systems
  e. Hybrid systems

- IES Technical Committee Sponsoring the Special Session (if any):
Power Electronics Technical Committee: Inverters/Rectifiers subcommittee, Impedance Source Converters subcommittee, Electric Machines and Drives subcommittee