

Special Session on
“Advances in Integrated Motor Drives”
Organized by

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Call for Papers

There are several advantages for IMDs (Integrated Motor Drives) by integrating the electrical machines with power electronics components together. The obvious potential benefits include higher system power density/smaller system footprint, reduced system cost, reduced cabling, reduced EMI issues, and more potential for modular systems. IMD has a wide range of applications including industrial drives, traction applications, aerospace applications, wind, and ship propulsion. On the other hand, there are some significant challenges that need to be addressed including customer acceptance for new systems, power electronics operating in harsher environments (in terms of temperature, vibration, and pressure as examples) similar to the electrical machines, and achieving the similar or better system cost and reliability.

Topics of interest include, but are not limited to:

This technical session aims to address the design and control challenges of IMDs in modern driving systems, with presenting the future trends of advanced electrical driving systems. The Topics of presentations and research papers include but are not limited to:

- Design of electrical machines in IMD
- Topologies of power electronics components in IMD
- Thermal management analysis of IMD
- Fault-tolerant control strategies for IMD
- Pulse width modulation and control schemes for IMD



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- EMI mitigation for IMD
- Modular/segmented machine topology and distributed power electronics
- Integration of electromagnetic and mechanical parts in IMD
- NVH issues in IMD
- Electromagnetic compatibility in IMD
- Control of IMD without or with less sensors
- Emerging challenges and applications of IMD