ICEM 2024, Torino, September 1-4 2024

Special Session on

High Efficiency Electrical Machines for Transportation Electrification - HEEM

Organized and co-chaired by

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Call for Papers

Pollution reduction constraints and green-house gas emission regulations have resulted in important research for energy efficiency improvements including electrical machines efficiency and creating respective classes such as Super Premium Efficiency (IE4) and Ultra-Premium Efficiency (IE5). Simultaneously, the increased motivation and incentives towards electrification of transportation is resulting in a higher production of inverter driven electrical machines. Therefore, improved efficiencies of electrical machines under converter supply are becoming critically important and this can be achieved by exploiting the developments on advanced materials, innovative configurations, harmonic frequencies management, appropriate converter control, ceramic and magnetic bearings in conjunction with high-speed operation, suitable measurement techniques, as well as manufacturing technologies. This special session is dedicated to all aspects of research enabling high efficiency electrical machines production serving transportation electrification initiative. Papers dealing with the research, application and manufacturing of constitutive parts, design, integration and operation of electrical machines for high efficiency drives are welcome.

Topics of interest include, but are not limited to:

- Thin iron lamination and low loss alloy magnetic steel machine cores for inverter supply.
- Winding configurations, insulation structures and combined inverter – electrical machine cooling techniques for high efficiency drives.
- Permanent magnet rotors and associated loss reduction techniques in inverter fed machines.
- Analysis of harmonic losses and converter control impact on electrical machines enabling high efficiency drives.
- Ceramic and electromagnetic bearings for high-speed, high efficiency traction applications.
- Measurement techniques for high efficiency inverter driven machines.
- Manufacturing techniques and technologies implemented in high efficiency traction machines.

Submission of papers: paper submission follows the rules of regular papers. All the instructions for paper submission are included in the conference website https://icem.cc/2024