

SPECIAL SESSIONS

SPECIAL SESSION 1: ROOM & TIME TBD

Development of Advanced Permanent Magnet Machines and Drives for E-Mobility

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This special section highlights advancements in permanent magnet machines and drives for E-mobility. As modern transportation evolves, innovative solutions like electric vehicles (EVs), electric aircraft, and eVTOL aircraft are gaining global traction. Permanent magnet machines, as the cornerstone of propulsion systems, play a pivotal role in achieving the high efficiency and reliability demanded by these emerging technologies.

Meeting the stringent requirements of E-mobility, especially in aviation where weight is a critical constraint, necessitates propulsion systems with high torque density, robust fault tolerance, high efficiency, and precise control accuracy. These attributes are essential for delivering reliable power and consistent performance under diverse and demanding conditions. Fault-tolerant electric motors are particularly vital, as they mitigate risks during potential failures, enhancing safety and operational dependability. Thermal modeling and cooling system optimization are key to maximizing output performance. Advancements in theoretical modeling and simulation methods are crucial to improve motor pre-design accuracy, ensuring alignment between design parameters and practical requirements. Additionally, some emerging technologies, such as artificial intelligence (AI), are further enhancing computational efficiency in design and optimization processes. By integrating AI, designers can achieve more accurate predictions and faster iterations, accelerating the development of next-generation electric motors tailored to E-mobility needs.



The future of electric propulsion depends on systems that balance high torque density with exceptional fault tolerance. To drive progress in this field, we invite submissions to the special session, "Development of Advanced Permanent Magnet Machines and Drives for E-Mobility." This session aims to provide a platform for researchers and practitioners to share cutting-edge advancements, address critical challenges, and explore new directions for E-mobility. Submissions should offer novel insights into both the theoretical and practical aspects of advanced permanent magnet machines and drives, contributing to the evolution of this transformative field.

