Calls for Papers

IEEE Transactions on Power Electronics (TPEL)

Special Section on Drives and Control of Electric Machines in Electric and Hybrid Aircraft Applications

Scheduled Publication Time: October 2025

As the aerospace industry moves towards more sustainable and efficient technologies, electric propulsion systems are becoming increasingly crucial. This special issue invites original research and review articles that address the design, optimization, and control of power electronics and drives in aviation applications. Contributions should explore advancements in advanced power electronics, new circuit design theories, and intelligent control strategies, focusing on how these innovations can enhance performance, efficiency, and reliability in aircraft systems. By gathering insights from leading experts, this special issue aims to advance the development of next-generation aircraft that are both efficient and environmentally friendly, supporting the industry's transition towards cleaner and more sustainable air travel.

This special issue aims to serve as a platform for researchers and industry professionals to share their latest findings and insights, contributing to the development of next-generation electric and hybrid aircraft that are more efficient, environmentally friendly, and capable of meeting the demands of modern aviation. Prospective authors are invited to submit original contributions and survey papers in these areas. Potential topics include, but are not limited to:

- Advanced power electronic design for electric aircraft systems
- Electric powertrain design for enhanced performance, efficiency, and reliability
- Advanced control design for electric machine drives
- Fault diagnosis and prognosis in electric powertrain components and systems
- Energy efficiency enhancement in electric aerial vehicles
- Fault-tolerant and safety systems
- Thermal management in power electronics and drives
- System efficiency maximization for power electronics and drives
- Cooling solutions for power electronics and drives
- Machine learning applications in design and control of electric aircraft
- Electric vertical takeoff and landing (eVTOL) design, power systems and control

All manuscripts must be submitted through at https://mc.manuscriptcentral.com/tpel-ieee

Submissions must be clearly marked “Drives and Control of Electric Machines in Electric and Hybrid Aircraft Applications” on the cover page. **Hardware based experimental results are desired to support proposed ideas.** When uploading your paper, please select your manuscript type “Special Section.” Refer to https://www.ieee-pels.org/ for general information about electronic submission through ScholarOne. Manuscripts submitted for the special section will be reviewed separately and will be handled by the guest editorial board noted below.

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Timeline

- March 31st, 2025 — Manuscripts Submission Deadline
- May 15th, 2025 — Revised Manuscripts Submission Deadline
- June 30th, 2025 — Final Acceptance Notification
- July 31st, 2025 — Manuscripts Forwarded to IEEE for Publication
- October, 2025 — Special Section Appears in IEEE TPEL