

**Special Section on:**

**High sustainable electric drives for transportation electrification**

**Theme:** Given that nearly 23% of the global CO2 emissions is blamed on the transport sector, its electrification becomes crucial for reaching the 2050 Net Zero Emissions scenario. The key enabler to this purpose is a sustainable design and development of electric powertrain systems, aiming at cutting the overall greenhouse gases emissions during each of the different life-cycle stages of the design, including procurement, manufacturing, use, and recycle or disposal. To improve the electric drive sustainability, alternative solutions are considered, which partially or completely reduce the utilization of materials having high environmental load, e.g., aluminum for replacing copper in the windings and wound field rotor topologies as substitute to rare-earth permanent magnets. These aspects open up fresh challenges on the performances during operation of electric drives, which necessitate high power density and efficiency designs. Consequently, much attention is drawn to the co-design of motors and power electronics, using integrative optimization techniques, innovative cooling systems, and advanced control methodologies, thus increasing the overall system efficiency and power density and reducing the energy consumption during operation. Finally, the most recent manufacturing technologies, such as robotics for process automation and additive manufacturing for fast prototyping, can potentially contribute to cutting the CO2 emissions during the production, recycling and disposal life-cycle phases.

This special section aims to comprehensively contribute in the latest research advancements on the field of **sustainable electric drives for transportation electrification**. Prospective authors are invited to submit original contributions and survey papers on the following topics, including, but not limited to:

- ✓ High sustainable electric drives solutions
- ✓ Electrical Machine design with alternative material for reduced environmental impact
- ✓ Rare-earth free motor solutions
- ✓ Electric motor and power converter co-design for system efficiency maximization
- ✓ Innovative cooling layout for electric motors and power electronics
- ✓ Multiphysics design and analysis of electric drives
- ✓ Multi-objective optimization strategies
- ✓ Electrical machine design for easy dismantle and reuse of magnets
- ✓ Electric drive design for improved recycling
- ✓ Sustainable insulation systems for high performance electric drives
- ✓ High-voltage electric drive designs and advanced power electronics architectures for reduced insulation stress
- ✓ Additive manufacturing of powertrain components

**Manuscript Preparation and Submission**

Check carefully the style of the journal described in the guidelines “Information for Authors” in the IEEE- IES website: <http://www.ieee-ies.org/pubs/jestie>. Please submit your manuscript in electronic form through: <https://mc.manuscriptcentral.com/jestie-ieee/>.

On the submitting page, in pop-up menu of manuscript type, select: “**SS on High sustainable electric drives for transportation**”, then upload all your manuscript files following the instructions.

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**Timetable**

Deadline for manuscript submissions:	Information about manuscript acceptance:	Publication Date:
<b>May 31, 2024</b>	<b>November, 2024</b>	<b>January, 2025</b>