Special Issue

Advanced Estimation, Control, and Optimization Techniques for Synchronous Machines in Next-Generation Electrified Systems

Message from the Guest Editors

This Special Issue invites original research and comprehensive review papers focusing on the latest advances in modeling, estimation, and control of synchronous machines. We welcome contributions that address emerging trends, challenges, and opportunities in both theoretical and applied aspects of three-phase or multi-phase synchronous machine systems. Topics of interest include, but are not limited to, the following:

- Sensorless control techniques for PMSMs and SynRMs;
- Real-time parameter estimation and adaptive observers;
- Digital twin and AI-enhanced modeling of synchronous machines;
- Flux and torque estimation under magnetic nonlinearity and saturation;
- Current reconstruction and DC-link current estimation methods;
- Field weakening and high-speed control of interior PMSMs;
- Model predictive control and advanced FOC for synchronous drives;
- Thermal modeling, derating strategies, and lifetime estimation;
- Fault diagnosis and fault-tolerant control in drive systems;
- Multi-objective optimization for efficiency, torque ripple, and noise.

We look forward to your contributions.

Guest Editors

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About the Journal

Message from the Editor-in-Chief

Machines is an international, peer reviewed journal on machinery and engineering. It publishes research articles, reviews and communications.
Our aim is to encourage scientists to publish their experimental and theoretical results in as much detail as possible. There is no restriction on the length of the papers. Full experimental and/or methodical details must be provided.
There are, in addition, unique features of this journal: Manuscripts regarding research proposals and research ideas will be particularly welcomed; Electronic files or software regarding the full details of the calculation and experimental procedure - if unable to be published in a normal way can be deposited as supplementary material.

Editor-in-Chief

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