

Call for Papers for the Special Session on

Model Predictive Control of Power Converters and Electrical Drives

Organizers and Co-chairs

Prof. Marco Rivera, University of Nottingham, UK

marco.rivera@nottingham.ac.uk

Prof. Patrick Wheeler, University of Nottingham, UK

pat.wheeler@nottingham.ac.uk

Prof. Emrah Zerdali, Ege University, Turkey

emrah.zerdali@ege.edu.tr

Prof. Fernanda Carnielutti, Federal University of Santa Maria (UFSM), Brazil

fernanda.carnielutti@ufsm.br

Technical Outline of the Session and Topics

In the last decades, fast modern microcontrollers have been continuously growing, allowing the development and implementation of new and more intelligent control strategies as an alternative to conventional techniques for power converters. Predictive control is a powerful and attractive alternative that has recently received special attention. Predictive control offers several interesting advantages: it is an intuitive control approach, does not need linear controllers and modulators, and is possible to include easily nonlinearities and restrictions in the control law. It can be expected that the advantages of predictive control will lead to industrial applications in the future after some further progress. We encourage all researchers working in this area or developing predictive control applications to submit papers to this SS.

Topics of this Special Session Include but are not limited to

- Predictive control applied to power converters and actuators: AC/AC, DC/AC, AC/DC, DC/DC.
- Predictive control in variable speed drives.
- Design and implementation issues of predictive control: prediction horizon extension, improved sampled-data models, cost function selection, weighting factor design, delay compensation, model parameters errors, variable switching frequency, etc.
- Predictive control implementations with machine learning, artificial intelligence, and more cutting-edge technologies.
- Predictive control in industrial and non-industrial applications: railway traction, electrically powered vehicles, more electric aircraft, wind energy generation, photovoltaic energy generation, power quality conditioners, etc.
- Sensorless control of electrical machines

Timeline for Author

Deadline for submission of special session papers

January 10, 2025

Notification of acceptance

March 10, 2025

Deadline for submission of final manuscripts

April 15, 2025

All the instructions for paper submission are available on the conference website.

