



## IEEE International Conference on Industrial Technology (ICIT 2026)

Monterrey, Mexico, 4-6 March 2026

<http://icit2026.ieee-ies.org>

### Call for Papers - Special Session on

### Advanced Applications of Model Predictive Control in Microgrids, Drives, Converters, and Renewable Energy Systems

*Organized and co-chaired by:*

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#### *Technical Outline of the Session and Topics:*

Model Predictive Control (MPC) and Model-Free Predictive Control (MFPC) have gained strong attention in power electronics due to their ability to incorporate multiple objectives and constraints while operating in discrete-time domains. These methods are applied to microgrids, drives, and converters by predicting system behavior and solving optimization problems to determine optimal switching actions. Despite their advantages, challenges such as computational complexity, weighting factor selection, and variable switching frequency remain. Recent advances combine MPC/MFPC with adaptive filters and adaptive signal processing to enhance efficiency, robustness, and real-time implementation. This Special Session explores these latest developments.

*Within this scope, topics of interest include, but are not limited to:*

- Latest developments and improvements in predictive control algorithms.
- Recent model predictive control solutions for eliminating weighting factors.
- New model predictive control methods for reducing switching frequency and control, as well as reducing the computation burden.
- MFPC solutions for power converters in grid-connected and motor drive applications.
- MPC Designs for Power Converters: Multilevel Converters, Matrix Converters, DC-DC, DC/AC, and AC/DC, etc.
- MPC Algorithms for Grid Connectivity Applications: Grid-Tied Converters, Active Front-End Rectifiers, etc.
- MPC Methods for Power Quality Applications: Active Filters, STATCOM, etc.
- MPC for Drive Applications: Induction Motors, PMSM Machines, etc.
- Hybrid control with model predictive techniques: MPC with artificial neural networks (ANN), MPC-fuzzy logic, MPC-sliding mode, etc.
- Machine learning with MPC
- Advances in adaptive filters for Model-free predictive control implementation.

*Author's schedule:* [Same as the ICIT Conference](https://icit2026.ieee-ies.org)

All the instructions for paper submission are included on the conference website: <https://icit2026.ieee-ies.org>