Annual Conference of the IEEE Industrial Electronics Society (IECON 2022)

Special Session on

"Future-Proof Power Electronic Systems and Coordinated Control for Residential Microgrids"

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Call for Papers

Theme: In recent past, the power distribution networks have witnessed a considerable penetration of Renewable Energy Sources (RES), thanks to rapid advancement in semiconductor technologies and development of new power electronics converters. Though these power conversion units have straightforward design and operating principle, the challenge of developing efficient control frameworks for seamless transition of Microgrid from Grid-connected (GC) mode to Standalone (SA) mode and vice versa have always been at the forefront. These technical challenges have encouraged researchers to devise wide range of control schemes targeting residential Microgrid application. Most importantly, Microgrid consisting of Photovoltaic (PV) units, Wind Turbine (WT), Battery Energy Storage Systems (BESS), and Fuel Cell require a coordinated control framework to achieve various control targets and thereby comply with various grid interconnected codes described in IEEE revised standard 1547-2018 and 519-2014. With this motivation, an increasing research effort has been witnessed to harness the various control functionalities of these power converters by devising new and efficient control architectures. These control designs are aimed to guarantee improved operational performance and reliability especially in Microgrid application for seamless transition from GC to SA mode, and vice versa.

In this context, this special session is preliminary aimed to provide a platform to the researchers from Academia and Industry for discussing technological challenges, exchanging novel ideas, and exploring emerging technologies related to Microgrid. Besides, the researchers are invited to present their R&D results pertaining to real-time test-bench development of Microgrid through Hardware-in-the-Loop (HIL) tools like dSPACE and OPAL-RT.

Topics of interest include, but are not limited to:

1.	Modelling and advanced control of power electronic converters for Microgrid application
2.	Coordinated control of power converters for Microgrid
3.	Compliance of grid interconnection rules (IEEE 1547-2018)

Good quality papers may be considered for publication in the IEEE Trans. on Industrial Electronics, subject to further rounds of review.

4.	Harmonics and power quality standards (IEEE 519-2014): An industry update
5.	Seamless transition of Microgrid from GC to SA under electrical anomalies
6.	Power electronic system for ancillary services
7.	Application of power electronic converters in WT and solar PV
8.	Advanced current and voltage controllers technology for power converter operation
9.	Application of Artificial Intelligence (AI) techniques for efficient Microgrid operation
10.	Real-time and Hardware-in-the-Loop (HIL) simulation of power converters

The sponsoring IES Technical Committee(s):

IEEE IES Technical Committee on Smart Grids (https://sites.google.com/view/ieee-ies-tc-sg/)

Submissions Procedure:
All the instructions for paper submission are included in the conference website**: https://iecon2022.org/**

Deadlines:

Full paper submission:	April 15, 2022
Paper acceptance notification:	June 17, 2022
Camera-ready paper submission:	July. 29, 2022

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