(23rd – 24th February 2024)

ISSETA 2024 Special Session on

Control and Protection of Power Electronics-dominated Microgrid System

Aims and scope of the session:

Microgrid can be operated in both grid-connected and islanded modes to fill the gap between the significant increase in demand and storage of electricity and transmission issues. Power electronics play an important role in microgrid due to the penetration of renewable energy sources. While microgrid have many benefits for power systems, they cause many challenges, especially in protection systems. To address this issue, in recent years, significant research has been devoted to establish novel topologies that combine voltage boosting and AC voltage generation to fit into grid-tied systems. This single-stage/two-stage power conversion system could be an attractive solution to improve efficiency, reliability, and compactness. Moreover, energy management and fault assessment is a burning issues due to bi-directional flow of power in hybrid AC-DC microgrid. This special session also aims to disseminate and highlight new research findings in the control and protection of power electronics dominated next generation microgrid. Authors are invited to submit original research and review papers in the field of power electronics, control, and protection of microgrid.

Topics of interest but are not limited to:

- Power converters in renewable integrated Microgrid system
- Novel DC-DC, DC-AC, transformerless topologies in Microgrid
- Modelling and control of high-gain converters in Microgrid
- Multilevel boost, Buck–boost, Switched-capacitor, Common-ground inverters
- Modulation and control techniques for power inverters
- Power converter design, reliability, and power density for renewable energy systems
- Soft-switching techniques for power converters
- Emerging and Intelligent control schemes in Microgrid
- Fault assessment and Protection schemes in Microgrid
- Simulation and modeling of smart Microgrid
- New devices and components for Microgrid design

Special Session Organizers:

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From 2013 to 2017, he was with the C. V. Raman College of Engineering, Bhubaneswar, India, as an Assistant Professor. From 2021 to 2022, he was with NIT Andhra Pradesh, Tadepalligudem, India, as an Ad Hoc Faculty. He is currently an Assistant Professor with the Department of EE, School of Energy Technology, Pandit Deendayal Energy University (PDEU), Gandhinagar, India. He was also with the University of Warwick, U.K., funded by the Joint U.K.–India Clean Energy Program, from January 2019 to March 2019. He was a recipient of several travel grants. He has authored/coauthored over ten IEEE TRANSACTIONS and reputed journals and also filed two patents. Recently, he has been listed in the World's Top 2% of Researchers under the energy category as per the Stanford University list. His research interests include efficient multilevel inverters design, high-gain converters, photovoltaic systems, and power quality. Dr. Panda received the Institute Best Research Award for Outstanding Research during his Ph.D. He is a regular reviewer of several IEEE, IET, Springer and Wiley journals

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