NE-IECCE 2026 Special Session (SS-09)

Title of Proposed Session:

Innovations in Modeling, Operation, and Intelligent Control of Smart Microgrids

Technical Outline of the Session

This special session aims to bring together researchers, academicians, and industry professionals to explore recent advancements in smart microgrids. It focuses on innovative methodologies, emerging technologies, and practical implementations that enhance the efficiency, resilience, and sustainability of microgrid systems. The session will provide a platform for knowledge exchange, fostering discussions on challenges, breakthroughs, and future research directions. It also highlights advanced modeling techniques, intelligent control strategies, optimization-based operation, distributed energy integration, and AI-enabled decision-making. By facilitating collaboration among experts, the session seeks to contribute to the development of intelligent, adaptive, and secure microgrid solutions that support reliable and sustainable modern power systems.

Topics of Session

The scope of this Special Session includes, but is not limited to, the following topics:

1. Modeling and Control of Power Converters in AC/DC Smart Microgrids
2. Advanced Energy Management and Optimization for Hybrid Energy Systems
3. Emerging Technologies in Energy Storage and Renewable Energy Integration
4. Intelligent and Adaptive Control Strategies for Grid-Connected and Islanded Operations
5. Cybersecurity, Power Quality, and Resilience Enhancement in Modern Microgrids

Special Session Organizers

1. Dr. Venkata Madhava Ram Tatabhatla
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Dr. Venkata Madhava Ram Tatabhatla is currently working as an assistant professor in the Electrical and Electronics Engineering Department at B. M. S. College of Engineering, Bengaluru. Prior to this received the B.Tech. and M.Tech. degrees in electrical engineering and power electronics engineering from Kakatiya University, Warangal, India, in 2013 and 2015, respectively. He achieved his doctoral degree with the Department of Electrical and Electronics Engineering, NIT Delhi, India in 2021. He had a granted patent to his name and has authored substantial amount of research articles in reputed journals and conferences. His research interests include power electronics, renewable energy, applications of power electronics in renewable energy, design and implementation of solar PV systems, renewable energy resources, power

management for hybrid energy systems, and smart grids. He is an IEEE member and active reviewer of various international conferences and reputed journals.	

2. Dr. Venkatesh Boddapati
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Dr. Venkatesh Boddapati is currently serving as an Associate Professor in the Department of Electrical and Electronics Engineering at B. M. S. College of Engineering, Bengaluru. He completed his B.Tech in Electrical and Electronics Engineering from Acharya Nagarjuna University, Guntur, Andhra Pradesh, in 2009, followed by an M.Tech in Power Electronics from B. M. S. College of Engineering, Bengaluru, in 2011. He earned his Ph.D. from the National Institute of Technology, Tiruchirappalli (NITT) in 2021. Dr. Boddapati is committed to bridging the gap between academia and industry, actively training both students and corporate professionals. In pursuit of this mission, he has executed several consultancy projects funded by various agencies, primarily in the domains of power electronics, electric drives, electric vehicles, renewable energy, and power systems. He has authored 30 research publications, 2 book chapters, one book, and also holds one granted patent. Beyond his academic and research contributions, he is actively involved in institutional administration, currently serving as the Secretary of BMS Educational Trust Hostels (International Hostels) and as a member of the Institutional Consultancy Committee.