

International Conference on Energy, Power and Environment (Towards Clean Energy Technologies)

September 04 – 06, 2020
National Institute of Technology Meghalaya, Shillong, India



ICEPE 2020

ICEPE 2020 Special Session (SS-05)

1. Title of the special session

Battery Storage and Fuel Cell Technology in Smart Grid Applications

2. Aims & Scope of the Session:

Battery Energy Storage (BES) systems and Fuel Cell (FC) based power systems are the promising technology for clean power generation and storage respectively and are the factual leading contributors in the realm of renewable energy because of its higher efficacy, cleanliness and economic supply of demanded energy to the consumers. In the smart grid corridor, the smartest application of these both lead to a better energy management as well as improving the system stability in consent of increasing power demand, instability of fuel prices and economic-environmental glitches. BES and Fuel cell based integrations in smart grid system have brought an advancing frontier in the field of power electronics and power engineering.

These techniques need powerful tools for design, simulation, control, estimation, fault diagnostics, and fault-tolerant control in modern smart grid and renewable energy systems (RESs). The technology has gone through fast evolution during last several decades, and their applications have increased rapidly in modern industrial systems. This special session aims at highlighting the applications of power electronics based components, converter technologies, Intelligent based Control, Operation, Protection, Sizing, Management, participation for higher power scale generation (FC based), etc. in context to Fuel Cell & BES based Smart grids (FC-SG).

3. Topics of interest include, but are not limited to:

- Advanced Power Electronic Components and Devices for FC-SG
- Advanced Power Converter Topologies and Design for FC-SG
- Aggregation of distributed energy resources along with FC & BES
- Micro Grid Control and Management with FC & BES
- Electric Vehicles (V2G, G2V) integration in FC-SG
- Monitoring, Operation-Control & Quality, Protection schemes for FC-MG
- Machine learning applications for FC-SG
- Applications of Soft computing Techniques for controlled FC-SG
- Various Sustainable Developments in Fuel Cell based applications

4. Special Session Organizers:

1. Dr. Puja Dash

Member of IEEE, ISTE
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Gayatri Vidya Parishad College of Engineering (Autonomous) Madhurawada,
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Dr. Puja Dash (M'94125593) was born in Cuttack, India, in 1983. She received the B.E. degree in electrical engineering from the Biju Patnaik University of Technology, Odisha, India, in 2005. She has completed her M.Tech with specialization in Power & Energy System Engineering from National Institute of Technology Silchar in the year of 2008 and completed her Ph.D in Electrical Engineering from National Institute of Technology Silchar in the year of 2015. She is presently working as an Associate Professor in EEE department at Gayatri Vidya Parishad College of Engineering Autonomous, Visakhapatnam, Andhra Pradesh, India. She has a total experience of 12 years in teaching and research. Her research areas are Automatic load frequency control and voltage regulation both in conventional and Deregulated power system with both renewable and non-renewable energy sources, Designing of intelligent controllers and designing of FACTS based controllers for power system applications, Coding and application of soft computing techniques. She is a Life Member of the Indian

Society for Technical Education (ISTE), the System Society of India and Member of IEEE. She has chaired a session in 3rd International Conference on Advanced Computing and Intelligent Engineering (ICACIE2018) Springer, 22-24 December, 2018, SOA University, Bhubaneswar. She has acted as the Technical Program Committee member in ICACIE2018- Springer, ICCIoT18-IEEE, ICEPE2018-IEEE successfully. She has acted as a Technical resource person and delivered at various National level Workshops, STTPs, FDPs founded by CSIR, TEQIP-III, Central University.

2. **Dr. Ritesh Dash**

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Dr. Ritesh Dash was born on 1989, Bhubaneswar, Odisha. He received the B.Tech in Electrical & Electronics Engineering from Biju Pattnaik University of Technology, Rourkela, Odisha, India in the Year 2010. He has completed his M.Tech in Power & Energy System from Kalinga Institute of Industrial Technology, Deemed to be University in the year of 2015 and Ph.D from the same University in the Year 2018 and has published more than 70 no. of papers in various Journals & Conferences. He is presently working in the capacity of Associate Professor & Head at Dept. of Electrical Engineering, Christian College of Engineering & Technology, Bhilai, C.G, India. He has a total Industrial and Teaching experience of 10 Years out which he served the WAPCOS Ltd. (A Central PSU under Ministry of Water Resources & Ganga Rejuvenation) in the designation of Design Engineering, Electrical for a period of 3 Years. His research areas include Machine Learning, Application of Deep Machine Learning in Power system, Power Electronics for Renewable Energy & FACTS Controller. He is presently working on

Two TEQIP-III funded projects in the role of Principal Investigator namely in the field of Smart Agricultural System & Sector Field application of Linguistic Variable in Power System. He has acted as a Technical resource person, Convener and delivered at various National level Workshops, STTPs, FDPs founded by TEQIP-III, Central University. He is associated with a number of National Bodies such as, ISTE,IEI, LSI, SESI, CSI, NSI, NSC, OBA, Some International Bodies such as IEEE, IAeng, and received different awards such as Best Researcher Award, Madhusudan Memorial Award, Best paper award from Orissa Engineering Congress and many more.