

Special Session Proposal

Title- “Recent Advancement in Integration of Renewable Energy to the Grids: Techniques, Challenges, Applications.

Session Chair: Abhishek Vishnoi, Assistant Professor, Kanpur Institute of Technology, Kanpur

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Objective & Overview of Session

In recent years renewable energy is the key source in the power and mobility sectors. The integration of multiple renewable energy sources and also the bio-inspired fuels with the grid power have gained popularity for effective energy utilization. Power electronic devices and the smart grids represents some of the most critical elements for efficient and reliable operation for application in all-electric hybrid energy systems. The electric hybrid energy systems have played a key role in microgrids and zero-emission transportations, to this end, hybridization in electric energy systems is a trending area of research which add-ons the advancements in power electronic converters have gained popularity not only to achieve compact integration hybrid electric energy systems, but also higher efficiency and power density. Over the past few years, several innovations have taken place. In order to address these challenges, there is also need of a cyber-physical microgrids to develop new methods by taking into account underlying and advanced techniques such as multi-agent systems, artificial intelligence-based control, big data cloud computing and management, and so on.

With these opportunities for improvement in mind, this special session aims to attract the latest developments in innovative control approaches, bio-fuel, optimization theory, energy management for cyber-physical microgrids, multi-port power converters and their applications to facilitate exchange of experiences to advance this field.

Topics of interest include, but are not limited to:

1. Integration of renewable energy with the grid.
2. Artificial Intelligence based Controlled Grids
3. Advancement in different converter topologies
4. Optimization and Control Techniques involved in the renewable energy
5. Cyber security in the microgrids
6. Energy management and costing in the renewable power sectors.
7. Advancements in the vehicle to grid & EV applications
8. Bio fuel driven localized grids.

Short Profile of Special Session Chair & Co-Chair



Mr. Abhishek Vishnoi, Assistant Professor, Department of Electrical & Electronics Engineering Kanpur Institute of Technology, Kanpur, Uttar Pradesh, India ORCID: **0000-0002-1052-4890**, Email: nittr.abhishek@gmail.com, abv@kit.ac.in

He is having 8 years of Teaching experience and 12 years of research experience. Having one successfully published Indian Patent, more than 8 Paper Publications in International Journals and Conferences. He is senior member of professional societies like SCRS, IAENG, AICTE and many more also having administrative expertise in the designing of various controllers and optimization techniques. He is active reviewer and Technical Program Committee Members of various International Journal and IEEE, SPRINGER, Taylor Francis and Inderscience Conferences. He has guided more than 100 Undergraduate and post graduate projects and research works. He has expertise in the several renewable energy and smart health care projects. He is currently working as head of department of electrical engineering in Kanpur institute of Technology, Kanpur.



Mr. Vikas Verma, Teaching Research Fellow, Division of Instrumentation & Control Engineering Netaji Subhas University of Technology, Delhi, India ORCID: **0000-0003-2910-5255**, Email: vverma.vikas.verma@gmail.com, vikas.verma.phd.22@nsut.ac.in

He is having 5 years of overall teaching and administrative experience and also additional 4 years of research experience. Having one successfully published Indian Patent, more than 10 Paper Publications in International Journals and Conferences. He is active member of professional societies like SCRS, IAENG and Committee member of IEEE, SPRINGER etc. He has also published several chapters in Scopus books Publications. He has also delivered many technical guest lecturers in special sessions of the International Conferences. He is also having two-year project research Experience of Biomedical area sponsored by Uttar Pradesh Council of Science and Technology. He has guided more than 30 Undergraduate and postgraduate projects and research works. He has expertise in the several renewable energy management, smart grid and smart health care projects.

