International Conference on
Sustainable Energy Technologies and Computational Intelligence
(SETCOM 2025)
Department of Electrical Engineering, SoET
Pandit Deendayal Energy University (PDEU), Gandhinagar, Gujarat, India |

February 21 – 23, 2025

SETCOM 2025 Special Sessions on

"Renewable Energy Integration and Smart Microgrid Optimization for Smart Grid Systems"

Aims & Scope of the Session :

This session will explore the integration of renewable energy into smart grids and the optimization of smart microgrids through advanced computational techniques, such as AI and ML. The focus is on innovative solutions that enhance energy management, optimize resource utilization, and ensure stability and reliability in smart grid systems. The aim is to address key challenges in renewable energy integration, system optimization, and smart microgrid operations to promote a more resilient and efficient energy future. Participants will engage with cutting-edge research on energy forecasting, load balancing, predictive maintenance, and cybersecurity solutions that improve the performance of smart grids powered by renewable energy sources.

In addition to addressing the technical challenges of integrating renewable energy into smart grids, this session will also emphasize the importance of real-time data analytics, fault detection, and decentralized energy management. Attendees will explore various use cases that demonstrate the potential of AI/ML to enhance grid reliability, reduce energy wastage, and optimize the interaction between distributed energy resources and storage systems. The session encourages interdisciplinary discussions that bridge gaps between AI-driven technologies and practical implementation in energy systems, fostering collaborations to advance the state-of-the-art in smart grid innovations.

Topics of interest include, but are not limited to:

- AI/ML applications in renewable energy integration.
- Optimization techniques for smart microgrid performance.
- Real-time energy management systems in smart grids.
- Predictive analytics for energy demand forecasting.
- Smart grid and microgrid cybersecurity.

- Integration of solar, wind, and other renewables into smart grids.
- Distributed energy resource management in smart microgrids.
- Decentralized energy storage and distribution solutions.
- Data analytics in energy flow and system control.
- AI/ML-driven fault detection and predictive maintenance in smart grids.

Special Session Organizers :

1. **Dr. Sarat Kumar Sahoo**, SMIEEE

   Professor and Dean Academics
   Dept. of Electrical Engineering,
   Parala Maharaja Engineering College, (Govt. Engineering College),
   BPUT, ODISHA.
   Email: sksahoo.ee@pmec.ac.in

2. **Dr. Vikram Kulkarni**, SMIEEE

   Assistant Professor (Senior),
   Dept. of Information Technology,
   Mukesh Patel School of Technology, Management, and Engineering,
   SVKM's NMIMS (Deemed to be University), Mumbai campus,
   Maharashtra, India.
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Special Session Organizers (short bios with photo):

Dr. Sarat Kumar Sahoo is a Professor in the Department of Electrical Engineering at Parala Maharaja Engineering College, Berhampur, Odisha, India, and is recognized among the top 2% of scientists by Stanford University's 2024 list. With over 25 years of teaching and research experience, he previously served as Professor and Head of the School of Electrical Engineering at VIT University, Vellore. Dr. Sahoo holds a Master's degree in Computer Application to Industrial Drives from Visvesvaraya Technological University (2002) and a Ph.D. from JNTU, Hyderabad (2011). He is an accomplished guide to doctoral students, with 7 PhD completions and 3 ongoing. He has led multiple government-funded projects, including those supported by the Department of Science and Technology (DST), and is an accomplished guide to doctoral students.

His research focuses on Grid-Tie Inverters for solar energy applications, renewable integration, smart grids, microgrid systems, and electric vehicle controllers. Dr. Sahoo has published over 60 international journals, 70 conference papers, and several books. He is a Senior Member of IEEE and a Fellow of the Institute of Engineers, IETE. He has delivered keynote lectures globally and received numerous accolades, including travel grants and the Chartered Management Institute Level-5 certificate.

Google scholar link:
https://scholar.google.co.in/citations?user=JC9v98UAAAAJ&hl=en

	**Dr. Vikram Kulkarni** is an Assistant Professor (Senior) and a Senior Member of IEEE at the Department of Information Technology, SVKM's NMIMS University, Mumbai, India. With 12.5 years of teaching and 4 years of research experience, he holds a Ph.D. in Wireless Sensor Networks for Smart Grid applications from VIT University (2019). His research interests include Deep Learning, Renewable Energy, Smart Grid, and Energy Forecasting. He has published 45 research articles, holds 2 Australian patents on IoT, and guides 3 Ph.D. scholars. Dr. Kulkarni regularly serves as a guest speaker and expert reviewer for journals such as IEEE Access and Soft Computing. Google scholar link: https://scholar.google.co.in/citations?user=OIh7o9IAAAAJ&hl=en