



SRM INSTITUTE OF SCIENCE AND TECHNOLOGY, KATTANKULATHUR
COLLEGE OF ENGINEERING AND TECHNOLOGY
DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

Session Details:

Title of the session: MICROGRID AND RENEWABLE INTEGRATION- CHALLENGES AND OPPORTUNITIES

Date: 10.02.2025

Duration: 2.15hrs held in two sessions. Session-I - 2.30 to 3.30 P.M

Session-II-3.45 to 5.00 P.M

Venue: EEE CONFERENCE HALL, ESB BLOCK, MAIN CAMPUS

Expert/Speaker Details

Name: Dr. S.S. DASH

Designation: Principal and Professor/EEE Department

Organization: Government college of engineering, Kalahandi, Odisha.

Brief about Expert/Speaker: **Dr. Subhransu Sekhar Dash** is currently working as a Principal & Professor at Government College of Engineering, Kalahandi, Odisha. Prior to this he was working as a professor and HOD at SRM University, Chennai in EEE Department. He is having more than 27 years of teaching and research experience. He is specialized in electric power systems with interests in Optimization techniques, Smart Grid, Energy Management, Power system operation and Control, AI. He has guided 35 Ph.D. students and involved in consulting and research projects in India. He has published over 285 manuscripts in peer reviewed journals and international conferences. He is a visiting research scholar at Le Havre University, France and University of Wisconsin, Milwaukee USA and Visiting Professor at Francois Rabelais University, POLYTECH, Tours. He is editor and reviewer of many international journals. He is Program Chair/ General Chair of many international conferences like CISPSSE, 2020, ICRERA 2016, 2017, 2018, ICICA 204-2018, AIECES 2015-2019. He has visited many countries like USA, UK, France, Spain, Singapore, Hong Kong for delivering guest lecture/ chairing session/ presenting research paper/ conducting International workshop from 2009 to 2019. He is an author of three books and published more than 30 chapters in Springer series. He has obtained his PhD degree from Anna University, Chennai in year of 2006, master's degree from UCE, Burla Odisha in 1996. He is a member of IEEE, Institution of Engineers (India) and life member of ISTE.

Outcome of the activity:

A **microgrid** is a localized energy system that can operate independently or in conjunction with the main power grid. It integrates various distributed energy resources (DERs) such as **solar panels, wind turbines, biomass, diesel generators, and energy storage systems** (like batteries) to supply electricity to a specific area—such as a campus, community, or industrial site.

Some of the key features of microgrids are decentralized operation, energy resilience, renewable integration, smart control systems.

Session 1: How to select the power electronic switches, power electronic converters based on their strengths, weakness, opportunities and threats. Based on the SWOT analysis, it has to be selected for applications according to the requirement.

Session 2: It has been discussed in this session about SWOT analysis of power system engineering before choosing the area of research. Power system focuses on the generation, transmission, distribution and utilization of electrical energy.

Challenges in Implementation:

- Technical challenges such as load balancing, grid synchronization, and power quality.
- Economic factors including cost of deployment and return on investment.
- Regulatory hurdles and policy considerations.

Opportunities and Future Prospects:

- Advancements in energy storage technologies (e.g., batteries, hydrogen cells).
- Role of AI and IoT in smart grid management.
- Potential of microgrids in rural electrification and disaster management.

Following this session, Q&A round where the research scholars and students engaged actively with the professor Dr. S.S. Dash topics discussed included real world applications of microgrids, smart grids, case studies on renewable integration and opportunities in the energy sector.

Conclusion:

The lecture offered a comprehensive understanding of the microgrids and their critical role in sustainable energy solutions. It emphasized the need for continued innovation and collaborative efforts to overcome existing challenges in renewable energy integration.

Participant details

Attendance list has been attached below

Photographs/Screenshots that show the participation of students and researchscholars –
Attached

