National Institute of Technology Rourkela

Registration Seminar

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| Seminar Title | : Design and implementation of robust control strategy for hybrid microgrid |
| Speaker | : Pranati Rani Purohit ( Rollno : 523ee2008) |
| Supervisor | : Prof. Arnab Ghosh |
| Venue | : EE-401, Department of Electrical Engineering |
| Date and Time | : 01 Oct 2024 (05:15 PM) |
| Abstract | : The proportion of renewable energy in traditional power generation is steadily increasing because of advancements in power electronic converters (PECs). A hybrid microgrid is a system that combines renewable energy sources and energy storage to enhance the reliability and efficiency of the system. A hybrid microgrid can be operated in islanded or grid-connected mode. A particle swarm optimization-based MPPT controller is used to extract the optimal power available at the PV module by controlling the duty cycle of a boost converter. A bidirectional buck-boost converter, capable of transferring power in both directions with appropriate voltage levels, is used for charging and discharging the lithium-ion battery. A bidirectional buck-boost DC-DC converter based on a conventional PI control strategy is employed to sustain continuous power flow between the DC bus and the battery storage system (BSS) while maintaining a constant DC-link voltage. Also, Power delivery at unity power factor is often the design goal of grid-connected inverters. This research utilizes a fuzzy logic control (FLC) architecture as an intelligent controller to enhance the dynamic response of a three-phase grid-connected VSI. The waveforms accurately follow the reference value and promptly reach the steady state value. |