National Institute of Technology Rourkela

Departmental Seminar

Seminar Title	: Performance Analysis of BLDC Motor in PV-Battery Integrated System with ANN MPPT
Speaker	: Prof. Kanungo Barada Mohanty
Supervisor	: Prof. S. Gopalakrishna
Venue	: EE205
Date and Time	: 26 Dec 2024 (11:30 Hrs)

Abstract : This research discusses the use of artificial neural networks (ANN) to monitor peak power. Neural networks are trained via the error back propagation approach. One benefit of neural networks is their ability to track maximum power points accurately and quickly. Here, the maximum power point's reference voltage is set using a neural network training process in different atmospheric circumstances through appropriate DC-DC boost converter management. The ANN-MPPT approach makes it feasible to soft start a BLDC motor. The BLDC motor's speed is managed via pulse width modulated control of the voltage source inverter via a DC-link voltage controller. The built-in encoder generates a PWM signal, which is then used to carry out electrical commutation through hall signal detection. The performance of the BLDC motor load is evaluated using the MATLAB/Simulink environment. The addition of a battery via a bidirectional DC-DC converter allows for the maintenance of a steady power supply in the context of fluctuating loads and irradiance levels. This research also covers the battery's charging and discharging modes.