

# Power System Research Group

The Power System research Lab at the School of Electrical Engineering, KIIT Deemed to be University, is a hub of innovation and learning. Our team consists of dedicated faculty members, PhD scholars, postgraduate students, and undergraduate researchers, all working together to advance the Power system research.

The group focuses on

- ❖ Power System Optimization: Application of optimization methods for Power system.
- ❖ Microgrid Protection: Innovative solutions for fast and secure protection scheme for microgrid.
- ❖ Power Quality Enhancement: Research on seamless integration of electric vehicles with the power grid.
- ❖ Protection of Transmission Line: Development of different algorithms for high voltage transmission line.
- ❖ Islanding detection: Strategies for optimal energy usage and distribution in power system.
- ❖ Integration renewable energy sources for reducing the environmental problem and air contamination.

Several other major thrust areas including the development of hybrid optimizing algorithm for power system integrated with renewable energy sources, the use of artificial intelligence and deep learning technique in modern power system, IOT and cybersecurity application in different power system network and the application of data driven solution for the implementation. Our research extends to integration of renewable energy sources, wide area measurement system, and synchro phasor initiatives for different power system network and compensated with FACTS device for power system research. The group has a prolific publication record with several papers published in SCI journals and prestigious conferences. To enhance hands-on experience and practical deployment for students, KIIT DU has signed an MoU with PRDC Bangalore.

## Power System Research Lab



## Research Thrust Areas are

- [1] Power System Optimization
- [2] Micro Grid Protection
- [3] Power quality Improvement
- [4] Protection of Overhead transmission line and Underground Cable
- [5] Cyber security and artificial intelligence application in power system
- [6] Power System Operation and Control
- [7] Islanding Detection

## Publications:

- [1] S. K. Mohanty, P. K. Nayak, P. K. Bera and H. H. Alhelou, "An Enhanced Protective Relaying Scheme for TCSC Compensated Line Connecting DFIG-Based Wind Farm," in *IEEE Transactions on Industrial Informatics*, vol. 20, no. 3, pp. 3425-3435, March 2024, doi: 10.1109/TII.2023.3306575
- [2] Mohapatra, S.S., Maharana, M.K., Pradhan, A. *et al.* Anti-islanding detection in grid-connected inverter system using active frequency drift technique with random forest. *Electr Eng* **106**, 3143–3168 (2024). <https://doi.org/10.1007/s00202-023-02137-2>
- [3] Jena, R.; Dash, R.; Reddy, K.J.; Parida, P.K.; Dhanamjayulu, C.; Swain, S.C.; Muyeen, S.M. Enhancing Efficiency of Grid-Connected Solar Photovoltaic System with Particle Swarm Optimization & Long Short-Term Memory Hybrid Technique. *Sustainability* **2023**, *15*, 8535. <https://doi.org/10.3390/su15118535>
- [4] Mitali Ray, Padarbinda Samal, Chinmoy Kumar Panigrahi "An Improved ANN Approach for Occupancy Detection of A Smart Building" in Indonesian Journal of Electrical engineering and Informatics.

## Power System Research Team

### Faculty Members: (Research Field)

- (1) Dr. Chinmoy Kumar Panigrahi: Power Electronics and Computational Intelligence Application in Power System
- (2) Dr. Sarat Chandra Swain: Soft computing application in power system
- (3) Dr. Manoj Kumar Maharana: Optimization Technique application in Power System
- (4) Dr. Padarbinda Samal: Optimization Technique and Soft Computing application in Power System
- (5) Dr. Subrat Kumar Barik: Micro grid Protection
- (6) Dr. Subodh Kumar Mohanty: Protection of FACTS Compensated Transmission line integrated with Large Scale Wind Farm and Solar PV System
- (7) Prof. Tapaswini Biswal: Micro Grid protection, High impedance Fault detection