POWER SYSTEMS LABORATORY

Power systems laboratory is responsible for Experimentation and Researching the area of Electrical Power Systems. Students can get concrete ideas about various equipment in practical power system network.

This laboratory is equipped with Three Phase Over Current & Earth Fault Numerical Relay Testing, representing practical on-field situations at a modular level. Students can individually experience different protective measures that are taken in the field. Experimentation on Transmission line simulation panels will help the students to gain knowledge on practical Transmission & Distribution system operation and control. Experimentation on Alternators, Tap changing transformers and phase shifting transformers will enhance the knowledge of the students in on-grid control and compensation techniques.

Total Investment made: Rs 9,78,486.00

LIST OF MAJOR EQUIPMENT

S.NO	Date of Purchase	Amount(Rs.)	Description of equipment	Lab Allocation
1	28/12/2016	4,55,875.00	Solar PV Emulator used for research work and in power systems lab	Power Systems Lab
2	13/10/2017	1,15,511.00	Three Phase Over Current & Earth Fault Numerical Relay Testing used to conduct experiment in power systems lab	Power Systems Lab
3	29/04/2019	4,07,100.00	Three phase Transmission Line model used to determine transmission line parameters	Power Systems Lab

LIST OF EXPERIMENTS

1. Determination of Receiving end quantities and the line performance of a medium/long transmission line using MATLAB
2. Using MATLAB code determine:
   (i) Bus admittance matrix by inspection method for a 3-bus power system and obtain
   (ii) Power flow solution by Newton-Raphson method.
3. Determination of Sequence components (Positive, Negative and Zero) of an alternator.
4. Transient analysis of a Single Machine Infinite Bus (SMIB) system.

5. Simulation of LG, LL, LLG and LLL faults on a simple power system using PSCAD/MATLAB.
6. Determine steady state frequency error and frequency deviation response for an
   (i) Isolated power system and (ii) Interconnected power system.
7. Plot the Swing curve for a simple 3 or 4 bus power system using MATLAB / PSCAD.
8. Plot V-I characteristics of Solar panel at various levels of insolation.
9. Study the effects of temperature and irradiance on Solar cell and plot the characteristics.
10. Study the performance of a Wind turbine system at different wind speeds and plot the characteristics.
11. Determination of Earth resistance in humid and dry earth conditions.
12. Study the Over current protection scheme using numerical relay.
13. Determination of Positive, Negative and Zero sequence reactances for a 3-phase alternator.
14. Determination of ABCD parameters and performance of a transmission line.

Faculty Incharge : Mr. P. Srihari

Lab Technician   : Mr. P. Vajraiah