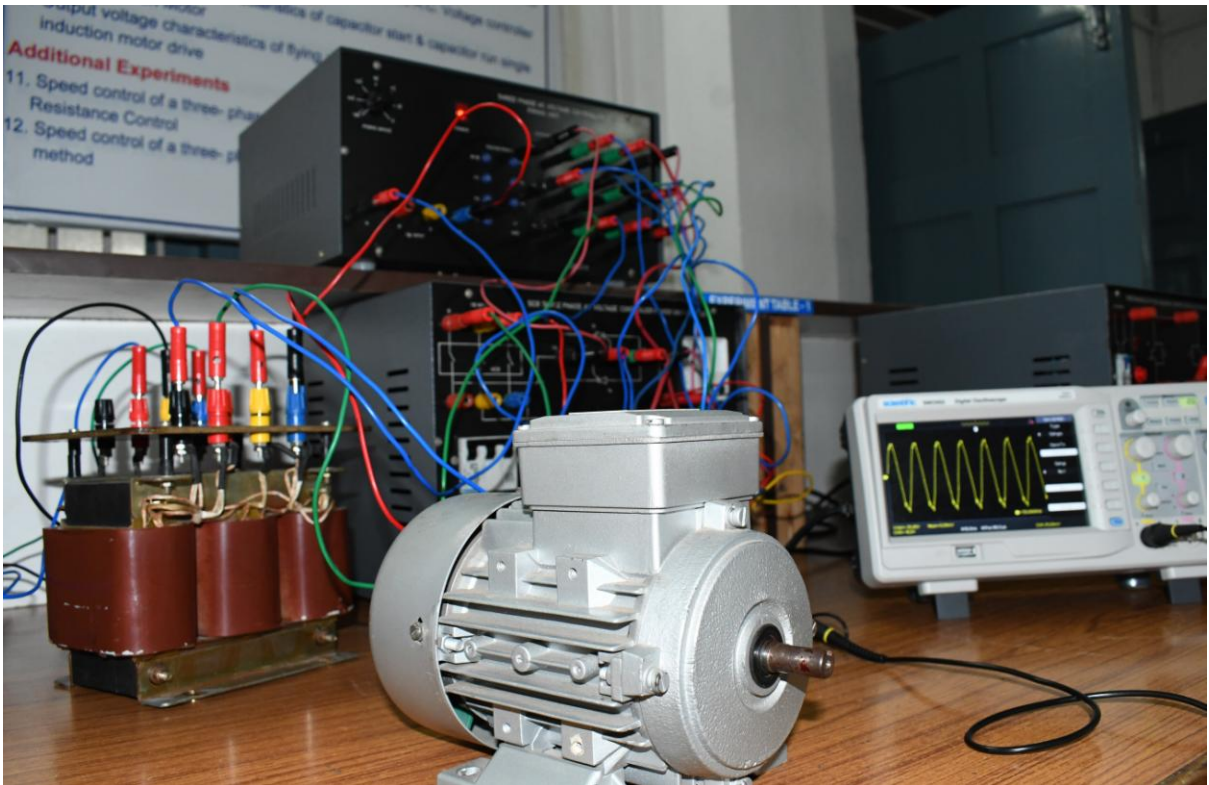


### **Power Electronics and Drives Laboratory**

Power Electronics is an important area of Electrical Engineering. It broadly deals with controlling the flow of electrical power using electronic switching devices. Power Electronics lab introduces the student to measurement and simulation of important operating characteristics of power electronic circuits and power semiconductor devices. It also provides experience with common components such as motors, batteries, magnetic devices, and power semiconductors.

**Area in sq.m** : 150  
**Established in the year** : 2001  
**Total investment made (Rs)** : 43, 45, 295/-







Major equipment :

S.No	Name of the Equipment
1	Single Phase Bridge Inverter
2	Single Phase Dual Converter
3	Single Phase IGBT based PWM Inverter
4	Three phase and single phase PWM pulse Generator
5	DC to DC PWM Controlled Boost Converter
6	3-Phase Fully Controlled Bridge Converter
7	Four Quadrant Chopper Drive
8	3- Phase A.C Voltage Controller For 1HP Induction Motor Drive

9	3-Phase IGBT Based PWM Inverter
10	3-Phase 3-Level PWM Inverter
11	3-Phase Slip Ring Induction Motor Drive
12	PIC Micro Controller Based Boost Converter
13	0.5 HP BLDC Motor Drive
14	0.5 HP Switched Reluctance Motor Drive
15	DSP Based Control of 1HP 3-Phase Induction Motor Drive (V/F Control)
16	DSP Based Control of 3 Phase Induction Motor Drive (Speed Control)
17	DSP Based Control of PMSM Drive
18	FPGA Based Control of BLDC Motor Drive
19	DSP Processor Trainer Kit (TMS320F2812)
20	Active Power Filter with Protection & Accessories
21	FPGA Controllers
22	3-Phase Multi Level Inverter Power Module
23	Power Quality Analyzer (Hioki Make)
24	AC Automatic Insulation Hitester (Hioki Make)

Licensed Software available in the lab: MATLAB/SIMULINK, PSPICE, LABVIEW, PSCAD

### **POWER CONVERTERS AND DRIVES LAB EXPERIMENTS**

1. Characteristics of power diode, BJT, SCR, IGBT & Power MOSFET.
2. Single phase AC voltage controller with R & RL Loads.
3. Single phase Fully controlled bridge converter with R & RL Loads.
4. Single phase IGBT inverter with R and RL Loads.
5. Three phase Fully controlled bridge converter with R Load.
6. Single phase Dual converter with R load.
7. Four quadrant operation of chopper with R load.
8. PWM control of Boost converter with R and RL loads.
9. Single phase ac to dc converter with LC filter using MATLAB/SIMULINK.
10. Single phase Inverter with current controlled PWM technique using MATLAB/SIMULINK.
11. Single phase ac voltage controller with R and RL load using MATLAB/SIMULINK.
12. Single phase Fully controlled PWM rectifier with R & RL loads using PSCAD.
13. Micro controller based PWM pulse generation.
14. Determination of output voltage and frequency of 1-phase step down Cyclo converter with R & RL loads for different firing angles.
15. Output voltage characteristics of 3-phase IGBT based PWM Inverter on R & RL loads for different modulation indices.

16. Output voltage characteristics of diode clamped multi-level inverter with R & RL loads.
17. Speed control of Three phase converter controlled dc motor drive.
18. Study and analyze the performance of Four quadrant operation of chopper fed dc motor drive.
19. Determination of speed and output voltage of 3-phase AC voltage controller fed induction motor drive.
20. Starting and Running characteristics of capacitor start & capacitor run single phase induction Motor.
21. Output voltage characteristics of flying capacitors multi level inverter fed induction motor drive.
22. Speed control of a three- phase slip ring Induction motor by Static Rotor Resistance Control.
23. Speed control of a three- phase induction motor drive using vector control method.
24. DC output voltage & AC link voltage characteristics of isolated DC-DC resonant converter.
25. Output voltage characteristics of DC-DC buck converter with R & RL loads using FPGA controller.
26. Power factor correction of PIC Microcontroller based boost converter.

Faculty Incharge : Mr. P. Deepak Reddy  
Lab Technician : Mr. Nagi Reddy