



SHRI VISHNU ENGINEERING COLLEGE FOR WOMEN:: BHIMAVARAM
(AUTONOMOUS)

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

POWER CONVERTERS AND DRIVES LAB

Objective: The main objective of power converters and drives lab is to familiarize the students with latest converters based on power semiconductor devices. This provides the basic practical knowledge in the application of power electronics in electrical drives and machines like thyristorized speed control of DC and AC motors.

Outcome:

1. Able to describe the operation of converter topologies for various loads
2. Able to control DC and AC loads using PWM techniques
3. Able to design control circuits for closed loop operation of induction motor drives using digital controllers

List of Experiments:

1. Operation of 3- phase Full-Converter on R & R-L load.
2. Performance & speed control of D.C. drive using 3-phase full Converter.
3. Performance & Operation of a four quadrant Chopper on D.C. Drive
4. Performance & Operation of a 3-phase A.C. Voltage controller on motor load.
5. Single Phase IGBT based PWM Inverter on R & R-L load
6. Operation of 3-phase IGBT based PWM Inverter on R & R-L load.
7. Performance & speed control of 3 phase slip ring Induction motor by Static Rotor Resistance controller.
8. Three phase PWM Pulse generation using PIC Micro controller
9. PIC Microcontroller based speed control of three phase Induction Motor
10. DSP based V/F Control of 3 phase Induction motor.

Additional experiments:

1. DSP based Speed control of BLDC motor
2. PIC micro controller based speed control of linear induction motor

Lab Equipment cost:

S. No.	Item Description	Quantity	Cost (Rs.)
1	Speed Measurement & Closed Loop Control using PMDC Motor	1	31,550.00
2	Thyristorised Drive for PMDC Motor with Speed Measurement & Closed Loop Control	1	36,950.00
3	IGBT based Single 4 Quadrant Chopper Drive for PMDC Motor with Speed Measurement & Closed Loop Control	1	41,650.00
4	Thyristorised Drive for 1 HP DC Motor	1	57,350.00
5	Thyristorised Drive for 1 HP DC Motor with Closed Loop Control	1	21,500.00
6	Three Phase Input Thyristorised Drive	1	77,450.00
7	Three Phase Input Thyristorised Drive 3 HP DC Motor with Closed Loop Control	1	37,600.00
8	Three Phase Input IGBT	1	69,850.00
9	Three Phase Input IGBT, 4 Quadrant Chopper Drive for DC Motor with Closed Loop Control	1	21,500.00
10	Cyclo-Converter based AC Induction Motor unit	1	23,950.00
11	Speed Control	1	25,650.00
12	Wound Rotor Induction Motor	1	39,500.00
13	HP Computer with LCD Monitor, HP Dx 2480 desktop inter dual core E5300 2.6 GHz processor 1GB RAM	15	2,88,461.4
14	3- ϕ Full Converter Firing Unit with 3- ϕ Isolation Transformer and L load	1	83,900.00
15	3- ϕ Full Converter Firing Unit	1	62,700.00
16	3- ϕ AC Voltage Controller Firing Circuit + B48	1	51,900.00
17	1- ϕ IGBT based PWM Inverter	1	69,500.00
18	3- ϕ IGBT based PWM Inverter with R&L load	1	68,500.00
19	3- ϕ PWM Pulse Generator	1	26,000.00
20	3- ϕ SCR based Inverter drive for 3- ϕ AC Motor -230V/2A	1	60,700.00
21	3- ϕ DSP based v/f Control Dive	1	60,700.00
Total			12,72,594.00