



**DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING**

**1. Research facilities available in the department including software tools.**

<b>S. No.</b>	<b>Equipment / Software</b>	<b>Cost in Rs. (lakhs)</b>	<b>Utilization</b>
<b>INTEGRATED ELECTRICAL MACHINES AND DRIVES SYSTEMS LABORATORY</b>			
1	Electrical Machines – Test Benches	108.58	Software aided Data Acquisition and Control of Electrical Machines.
2	Labview and Multisim	24.00	To perform and analyze Power system and Power Electronic Drives Lab experiments and leading to Research projects.
<b>POWER SYSTEMS LABORATORY</b>			
1	Transmission Line (Power Transmission Line Trainer)	2.28	<ul style="list-style-type: none"> <li>• To perform and analyze Power transmission line model.</li> <li>• Design of prototype FACTS devices, leading to research work.</li> <li>• To perform and analyze Reactive Power Compensation.</li> </ul>
2	Generator Protection Scheme Transformer Protection scheme	7.08	<p>To perform and analyze Generator Protection scheme with various types of faults with potential future research work.</p> <p>To perform and analyze Generator Protection scheme with various types of faults with potential future research work.</p>
3	Clamp on Power meter Clamp on Current Probes Software CW Viewer Digital Storage Oscilloscope	8.69	<ul style="list-style-type: none"> <li>• To Perform and analyze of power quality problems leading to research work with the following measurements:</li> <li>• Measurement of Instantaneous values</li> <li>• Power Quality Measurement</li> <li>• Demand Management</li> <li>• Harmonics Measurement</li> <li>• Waveform Measurement</li> <li>• Voltage Fluctuation Measurement</li> <li>• To perform and analyze power system signals leading to research work.</li> <li>• Amplitude, period, and duty ratio for each period in various modulation signals</li> </ul>



			<ul style="list-style-type: none"> <li>• Current, voltage, and period for each switching cycle as the load fluctuates in a switching power supply</li> <li>• Output level of each sensor per revolution in engine or motor</li> <li>• Clock count in serial data</li> <li>• Stepping motor revolution pulses</li> <li>• Optical disk tracking error signals</li> <li>• Interrupt signals from Microcontrollers.</li> </ul>
<b>POWER ELECTRONICS AND DRIVES LAB</b>			
<b>1</b>	<ul style="list-style-type: none"> <li>• Three Phase Semi converter with DC Load</li> <li>• Four Quadrant Chopper Fed DC drive</li> <li>• Three Phase AC Voltage controller with motor load</li> <li>• Three Phase PWM Inverter with R and RL load</li> </ul>	2.66	To perform and analyze Power Electronics and Drives Lab experiments with potential future research work.
<b>ELECTRICAL SYSTEMS &amp; SIMULATION LABORATORY</b>			
<b>1</b>	PSCAD X4 Academic	2.10	<ul style="list-style-type: none"> <li>• To perform and analyze power systems transients.</li> <li>• To simulate the time domain instantaneous responses (electromagnetic transients) of electrical systems.</li> <li>• To design and analyze HVDC, SVC, FACTS and Power Electronic Converters and their control circuits and leading to research work.</li> </ul>
<b>2</b>	Synopsis Asia Pac - SABER RD	8.00	Simulation software for Power Electronics and Drives systems
<b>3</b>	MATLAB (Release R2015b) a. Matlab 8.5 b. Simulink 8.5 c. Control System Toolbox 9.9 d. Sim Power Systems 5.8 e. Simscape 3.13 f. Neural Network 8.3 g. Fuzzy Logic 2.2.21	24.00	<ul style="list-style-type: none"> <li>• Simulation of control techniques using MATLAB.</li> <li>• Simulation of Compensation, Network coding for Control System Problems.</li> <li>• For Simulation studies at M. Tech. and leading to Research work.</li> </ul>
<b>4</b>	DELL Optiplex 3020 SFF Desktops Intel Dual Core, 2GB RAM, 500GB HDD, AOC E1670SW Led Monitor Windows 8.1 OS Software	2.57	To perform and analyze Power system and Power Electronic Drives Lab experiments and leading to Research projects.
<b>5</b>	LENOVA Think Centre M72 Desktop (Core i3)	6.70	To undertake simulation centered Lab activities, Power Systems Lab for M. Tech. (PSCA) and M.



	Intel core i3, 2 <sup>nd</sup> Gen, 3220 Processor, 2GB RAM, 500GB HDD, 10/100Mbps Ethernet Card (with 18.5" wide LCD Monitor) – 26 No's LAN Connected.		Tech. (PED) programme, Simulation Lab, M. Tech Projects, leading to Research work.
6	EDWIN-XP Version 1.90 Software for Spice Simulation	2.52	<ul style="list-style-type: none"> <li>• Simulation of various Power Electronic converter circuits and drives for various applications.</li> <li>• For all the above simulation studies at M. Tech. (PED) and leading to Research work.</li> </ul>
7	MATLAB (Release R2009a) Upgraded to (R2009b) a. Simulink – 5 User b. Simpower system – 5 User	2.61	<ul style="list-style-type: none"> <li>• Simulation of Power System analysis like load flows, fault analysis, stability and control techniques using MATLAB/SIMULINK.</li> <li>• For Simulation studies at M. Tech. and leading to Research work.</li> </ul>
8	ORCAD Capture ORCAD PSPICE A/D	2.16	<ul style="list-style-type: none"> <li>• Simulation of various Power Electronic converter circuits and drives for various applications</li> <li>• For all the above simulation studies at M. Tech. and leading to Research work.</li> </ul>
<b>ELECTRICAL MEASUREMENTS LAB</b>			
1	Electrical Measurements Modules - <ul style="list-style-type: none"> <li>• Kelvin's Double Bridge</li> <li>• Schering's Bridge</li> <li>• Andersons Bridge</li> <li>• Wheat Stone Bridge</li> <li>• Megger Circuit</li> <li>• Resistance Strain Gauge</li> <li>• Fluke Meter</li> <li>• Lux Meter</li> <li>• Digital Multimeter with Frequency mode</li> </ul>	1.7	<ul style="list-style-type: none"> <li>• To perform various experiments relating to determination of Resistance, variable Inductance &amp; Capacitance, frequency, etc.,</li> </ul>

**2. Research Projects executed by the Department funded by DST / AICTE/ UGC:**

S. No	Title of the Project	Funding Agency	Approved Duration	Cost of the Project in Rs. (in Lakhs)	Principal Investigator/ Co- Investigator
1.	Modernization of Power System Lab of M. Tech. (PSCA)	AICTE Under MODROBS	2012 - 13	16.63	Dr. K. Narasimha Rao
2.	A Wind and Solar, Hybrid Power Generation for Generating 199 kW of Electrical Power of Renewable Energy Sustainable Energy	MNRE, Government of India	2011 - 12	400	Dr. Sastry V. Vedula, Dr. C. V. K. Bhanu

**2.1 Industrial consultancy:**

S.No	Resource Persons	Title of the Project	Year	Name of the Consultancy	Total Cost ( Rs. in Lakhs)	Project Status
1	Dr. Sastry V. Vedula	Power Electronic and Drives	Feb 2016	HBL Power Systems Ltd	22.90	On Going
2	Dr. Sastry V. Vedula	Models of Aircraft Electrical power systems using Model Based System Engineering (MBSE) methodologies	June 2013	LMS India Engineering Solutions Private Limited (LMS) , Chennai	2.16	Completed
3	Dr. C. V. K. Bhanu	An Alternative Energy for Small Agricultural and Rural Support Yalamachalli, Vizag District	2 Years	Telugu Fine Arts Society (TFAS), USA	3.65	Completed

**2.2 Details of Industry Research problems working out by the department presently:**

<b>S. No.</b>	<b>Industry Research Problem</b>	<b>Investigator</b>
1.	Hyderabad Batteries Limited (HBL), Hyderabad 20 kW Grid connected Inverter Model based Design of power & control circuits to be simulated and analysed that shall meet the design specifications such as : Efficiency, THD, PF & Operating frequency range	Dr. Sastry V. Vedula
2.	Hyderabad Batteries Limited (HBL), Hyderabad 30 KW PM Generator Model based Design of power & control circuits to be simulated analyzed that shall meet the design specifications (110 V DC, 230 A): Load regulation with varying speed, Minimum speed for rated output, cut- in speed , etc.	Dr. Sastry V. Vedula
3.	Hyderabad Batteries Limited (HBL), Hyderabad 150 kW PM, Multiphase Synchronous Motor speed control Model based design of PMSM to be operated from a 600 V DC with a speed accuracy of $\pm 1$ RPM; thermal design shall be attempted by GVPCE. Goal is that the simulation work shall help leading to an efficient design that meets all functional & environmental requirements within the space limitations.	Dr. Sastry V. Vedula
4.	Amar Raja Batteries, Tirupati Control of Hybrid energy storage system.	Dr. Sastry V. Vedula
5.	Mahindra Reva, Bangalore Electric Vehicle battery charging Methods and Battery Management for an electric vehicle.	Dr. Sastry V. Vedula
6.	Vizag Steel Plant Study and quantification of Power Quality issues (Harmonics) of different drives in Visakhapatnam Steel Plant (along with Sri ASR Sekhar)	Dr. C. V. K. Bhanu
7.	EMMVEE Photovoltaic's Pvt. Ltd, Bangalore Performance Analysis of utility-scale Solar PV systems.	Dr. C. V. K. Bhanu
8.	Impact of Solar PV on Voltage regulations devices in Distribution Systems.	Dr. C. V. K. Bhanu
9.	Vizag Steel Plant Coordination between loss-of-excitation protection Settings and under excitation limits of an alternator	Dr. K. Narasimha Rao
10.	EMMVEE Photo voltaic's Pvt. Ltd, Bangalore Effect of monitoring devices error on Performance ratio of solar power plant	Dr. K. Narasimha Rao



### 3. Industry- Institute Interaction M.Tech. Dissertations:

S. No.	Organization	Title of the Project Work of STUDENTS	Name of the Student
1	HBL Power System limited, Hyderabad	Modeling and simulation of grid connected 10 KVA, 3-phase solar inverter	Mr. Chikkireddy Ravi
		Vector control of 3-stage / slice axial flux permanent magnet synchronous motor	Mr. R Srikanth
		Comparison of wide voltage range variable frequency ac-dc converter topologies for PMA controller application	Mr. G Jagadeesh
2	Naval Science & Technological Laboratory (NSTL), Visakhapatnam	Power Electronics and Drives – Sensor-less drive under water vehicle thrusters	K. V. K. S. Satish Kumar
3	Rashtriya Ispat Nigam Limited (RINL-Steel Plant), Visakhapatnam.	Study And Analysis of the Offset Mho Characteristics for the Loe Protection of an Alternator	S. Praveen Kumar
4	Amar Raja Batteries, Tirupathi.	Control of Hybrid energy storage system	Ms. B Lakshmi Prassanna
5	Mahindra Reva, Bangalore	Electric Vehicle battery charging Methods Battery Management for an electric vehicle	Ms. Manasa Ms. Udaya Rani
6	Naval Science & Technological Laboratory (NSTL), Visakhapatnam	Autonomous SPV application for under water systems	Ms. Syed Rubeen Sana
7	Rashtriya Ispat Nigam Limited (RINL-Steel Plant), Visakhapatnam.	Study of power quality issues on industrial drives in Vizag Steel Plant	Ms.M Sushma
8	EMVEE Solar Systems	Modeling and designing of a utility scale solar PV system Performance evaluation of utility scale on grid SPV System	Mr. Venkata Pavan Kumar Mr. B. Dencil Phanindra
9	AVI Solar Energy Private Ltd, Chintalapudi, AP	Testing and commissioning of on grid solar PV Systems	Mr. Kaki Raju
10	Bharat Heavy Electrical Limited (BHEL), R&D, Hyderabad	Design and study of NPC H-bridge Hybrid Multilevel Inverter based on STATCOM	Mr. M. Srinivas Rao





# GAYATRI VIDYA PARISHAD COLLEGE OF ENGINEERING (Autonomous)

Approved by AICTE, New Delhi and Affiliated to JNTU-Kakinada

Re-accredited by NAAC with "A" Grade with a CGPA of 3.47/4.00

Madhurawada, Visakhapatnam - 530 048.

11	GE lightning, Bangalore.	50 W LED Driver for Indoor, Commercial & Street lightning Applications	Naga Amulya. Ch
12	GE lightning, Bangalore.	Cost effective LED Driver for 15 W down lighter	K. Harija Rani
13	LMS, Chennai	Modelling & Analysis of a traditional Aircraft generator & its sub systems	G. Dinesh
14	LMS, Chennai	Modelling of variable frequency generator and static inverter for an aircraft application	K.N.V.K. Kishore
15	Naval Science & Technological Laboratory (NSTL), Visakhapatnam	Modelling & Simulation of solar powered BLDC motor for agriculture applications	B.V.A.S.S.R. Krishna
16	Central Power Research Institute (CPRI), Bangalore.	Study of transient performance of capacitive voltage transformers	Jawahar A
17	Amar Raja Batteries, Tirupathi.	Design and Verification of Battery Management System for LI-ION Pack.	Muttineni Krishna
18	Amar Raja Batteries, Tirupathi.	A converter design for Hybrid Storage Technology with effective utilization of battery Energy Storage System	K. Priyanka
19	Rashtriya Ispat Nigam Limited (RINL-Steel Plant), Visakhapatnam.	Speed Control of Three Phase Induction Motor Driving boiler Feed Pump Using Hybrid PID Plus Fuzzy Logic Controller	N. D. P. Jyothi