ISO 9001:2015 AICTE-CII GOLD Category Institute NAAC-'A' Grade Institute (CGPA: 3.21)

KAKATIYA INSTITUTE OF TECHNOLOGY & SCIENCE

Opp : Yerragattu Gutta, Hasanparthy (Mandal), WARANGAL - 506015, TELANGANA, INDIA

काकतीय प्रौद्योगिकी एवं विज्ञान संस्थान, वरंगल - ५०६०१५, तेलंगाना, भारत

కాకతీయ సాంకేతిక విజ్ఞాన కాన్ట్ర విద్యాలయం, వరంగల్ - ౫౦౬ ౦౧౫ తెలంగాణ, భారతదేశము

Estd. 1980 KITSW

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ELECTRICAL & ELECTRONICS ENGINEERING

RESEARCH AND DEVELOPMENT (R & D)

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

KAKATIYA INSTITUTE OF TECHNOLOGY & SCIENCE, WARANGAL

(An Autonomous Institute Under Kakatiya University, Warangal)

DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING

1 Profile of the Department

- The Department of Electrical & Electronics Engineering started in the year 1994 with an annual intake of 60. The department is sanctioned with a P.G. Programme - M.Tech. (Power Electronics) with an intake of 18. The department has well qualified faculty from IITs, NITs, BITS Pilani, and JNTU.

NBA Accreditation: The UG Programe B. Tech, in Electrical & Electronics Engineering has the distinction of being accredited by the National Board of Accreditation (NBA), New Delhi for four times (2011, 2017, 2019& 2022). The PG Programe M. Tech, in (Power Electronics) accredited by the National Board of Accreditation (NBA) , 2023

- Twenty-six batches have successfully completed their degree and are placed well in India and Abroad. All the Laboratories in the department are fully established. It has acquired excellence in the areas of Power Systems and Power Electronics and has well trained and committed faculty.
- The Department is established with its uniqueness with state of art laboratories like Power Systems, Digital Simulation, Power Electronics & Drives, Control System Engineering, Electrical Machines, Networks, Electrical Measurements, and Basic Electrical Engineering and pioneered the short visits to industries. Most of the final year project works are structured to include both the modeling and simulation aspects as well as practical cases from industries.
- The department has updated its curricula regularly in tune with NIT standards. The department has also established its own Library.
- The faculty members have attended a number of continuing education programmes and contributed papers to various National & International Conferences & Journals. At present the department has 3 Professors, 6 Associate Professors and 21 Assistant Professors with 18 Ph.Ds and some of the faculty members are working for their doctoral degrees. The department has successfully organized Workshops, National Level Technical Symposiums for faculty and students.

2 Papers & Books authored and patents filed

Academic Year		2023-24	2022-23	2021-22	2020-21	2019-20	2018-19
Publications	Conferences	-	2	4	7	6	8
	Journals	2	8	13	10	3	3
Books & Book Chapters		-	2	2	2	2	1
Patents Filed / Granted		-	-	3	4	1	-

3 Major Research Groups (MRGs)

Sl No.	Major Research Group	Faculty Members	Research Area	Ph.D. from	Experience (Yrs)	Research Publications (Journals+ Conferences)
1	Power Electronics	Dr. C. Venkatesh	• Power Quality Improvement • Multilevel Inverters for Renewable energy applications	NIT, Warangal	23	47
		Dr. V. Rajagopal	• Renewable Energy sources integration for Grid and off-grid applications Custom Power Devices Reduced Switch Multilevel Inverters for solar applications	IIT, Delhi	28	59
		Dr. B. Jagadish Kumar	• Power Electronics, Electric Drives	JNTU, Hyd	17	40
		Dr. A. Pranay Kumar	• Power quality • Grid connected inverters • Multi level inverters • Model Predictive Control	NIT, Warangal		
		Dr. B. Pradeep Kumar	• Fault tolerant Modular multilevel converters • Fault detection and degradation estimation in solar PV systems	NIT, Trichy	12	07
2	Electrical Machines & Drives	Dr. A. Madhukar Rao	• Energy balancing of Batteries for EV applications • Fault tolerant DC-AC Converters	IIT Hyderabad	5	17

3	Power Systems	Dr. G. Rajendar	• Power System Stability • Voltage Control • FACTS	JNTU, HYD	22	30
		Dr. B. Vijay Kumar	• Application of AI techniques to improve stability of the power system • Renewable energy integration	NIT, Warangal	17	16
		Dr. P. Nagarjuna Reddy	• High voltage insulation • Renewable energy integration	JNTU, Hyd	17	31
		Dr. D. Rakesh Chandra	• Integration of Renewable energy Into the grid • AI applications in power systems	NIT, Warangal	6	11
		Dr. Y. Manjusree	• Power system protection and Renewable energy Integration	ANU,Guntur	16	16
		Dr. M. Santhosh	• AI applications to Power Systems	NIT, Warangal	2	-
		Dr. V. Prakash	• Power Quality, Distributed generation, Renewable source integration	JNTU, Hyd	21	39
		Dr. V. Ashok	• Power Systems, Renewable energy systems, Applica - tion of artificial intelligence techni ques, Electricity regulatory affairs	NIT, Raipur	23	-
		Dr. V. Srikanth	Microgrids and Distributed Generation, Electric Vehicles, Battery Manage ment Artificial Intelligence Techni ques Application to Power System Renewable Energy Sources.	VIT, Vellore	12	9

4 Major Research Facilities

Sl No.	Name of Laboratory	Major Equipment / Software
1	Electrical Machines Lab	• Motor-Generator sets (AC and DC) • 3-Phase Synchronous machines • 3-Phase and 1-Phase Induction motors • 3-phase and 3 -winding transformer, Scott connected transformers
2	Control Systems Lab	• Linear System Simulator and Second Order System Study Unit • Stepper Motor Control Using Microprocessor • DSO 70 MHz Bandwidth • DC position Control System • PID Controller Trainer Kit • 5 Personal Computers • Software (MATLAB)
3	Power Electronics Lab	• 3- Phase Rectifier, 1- Phase Dual converter & 1- Phase Cycloconverter, 3- Phase Inverter, 1- Phase AC Voltage Controller • 3- Phase and 1- Phase Isolation transformers • Cathode Ray oscilloscope & Digital Storage oscilloscope • 1-Φ Power Analyzer • 5 Personal Computers • Software (MATLAB)
4	Electric Drives Lab	• Speed measurement and closed loop control using PMDC Motor • Three phase/Single phase input thyristorised drive 1 Hp DC motor with closed loop Control • Cycloconverter based AC Induction Motor control equipment • Speed control of three phase wound rotor Induction Motor • DSP based DC/AC Drive • Single Phase PWM inverter • Stepper motor control

5	Digital Simulation Lab	• 36 Personal Computers • Softwares(MATLAB, PSCAD, PSIM, MiPower)
6	Power Systems Lab	• Artificial transmission line • Percentage differential relay • Static overcurrent relay • Transformer oil testing kit
7	Power Electronics Simulation Lab	• 21 Personal Computers • Software (MATLAB)
8	Renewable Energy Systems Lab	• Solar PV Training and Research System • 15 Personal Computers • Software (MATLAB)
9	Power Converters Lab	• IGBT based Three phase Fully Controlled Rectifier • DSO 70 MHz Bandwidth • Buck-Boost Converter • Single phase PWM Inverter

5 Research Projects Ongoing / Completed : NIL

6 Consultancy

6.1 Major Areas of consultancy

- Quality check of Electrical street lighting system
- Design of Solar PV System
- Power Quality Measurement
- Measurement of breakdown strength of Transformer Oil

6.2 Major Ongoing Consultancy Projects : NIL

7 Ph.D. scholars working under the supervision of the department faculty

Sl No.	Supervisor	Ph.D Scholars	Research Topic	Year of Registration	University
1	Prof. V. Rajagopal	J. Bangarraju	Custom Power Devices (DSTATCOM and DVR)	2013	JNTU Hyderabad
		B. Subhash	Isolated wind power generation	2014	JNTU Hyderabad
		K. Amritha	IG wind power generation	2015	KL University, Vijayawada
		K. Lakshmaiah	Various Algorithms for UPQC	2017	JNTU Hyderabad

8 MoU with External Agencies: 1. TSGENCO 2. NIT W 3. CAPRICOT

9 Potential Areas of Research and Consultancy

Sl No.	Major Research Group	Potential Areas of research and Consultancy	Faculty Team
1	Power Electronics	• Design of Converters for Renewable Energy Applications • Renewable Energy sources integration for Grid and off-grid applications • Custom Power Devices • Reduced Switch Multilevel Inverters for solar applications	Dr. C. Venkatesh Dr. V. Rajagopal Dr. B. Jagadish Kumar Dr. A. Pranay Kumar Dr. B. Pradeep Kumar
2	Electrical Machines & Drives	• Electrical Machines & Drives	Dr. B. Jagadish Kumar Dr. A. Madhukar Rao Sri K. Ajith
3	Power System	• Power Quality Analysis of Distribution System through Neural Networks, Machine Learning • Power system Stability Analysis • Voltage Control , FACTS applications to Power Systems • Power Quality • Design of Solar PV System • Transmission Line Protection • Artificial Intelligence Techniques Application to Power System	Dr. G. Rajendar Dr. B. Vijay Kumar Dr. P. Nagarjuna Reddy Dr. D. Rakesh Chandra Dr. Y. Manjusree Dr. M. Santhosh Dr. V. Prakash Dr. V. Ashok Dr. V. Srikanth
4	Control Systems & Instrumentation	• Stability Analys is of Linear and Non-linearsystems • Applications of AI Techniques in the fields E&E Engineering • Implementation of different control techniques in all fields of Electrical Engineering • Signal Processing Applications in ECG Signal Analysis • EV Modelling, Analysis, Simulation & Control Design • Design of Algorithms for SOC estimation in EV BMS. • Modeling, Stability analysis and linear & nonlinear control design of Large- scale systems viz Nuclear Reactors	Dr. G. Rajender Naik Dr. A. Rajasekhar
5	Nano Technology	• EMI shielding • Energy storage • Energy harvesting • Sensing • Structural health monitoring	Dr. G. Sudheer Kumar

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