

## **2015-16 RESEARCH GROUP**

### **Power Electronics & Drives (PED)**

The great pace of development in power semiconductor devices, energy storage elements, faster and accurate digital control techniques and vast application area had made this sector of electrical engineering one of the most popular sector for research. The department is well equipped with various simulation softwares, experimental set-ups, measuring and analyzing devices, dedicated faculty members and expert technician staff.

#### **Associated Faculty Members**

Prof. Ravi Gupta  
Prof. S K Tripathi  
Prof. Arvind Kumar Sharma  
Prof. Ankit Singhal  
Prof. Ashish D. Thombre  
Prof. Nitish Verma

### **Computation Intelligence & System Modelling Analysis (CISMA)**

The Computational Intelligence & System Modelling Analysis (CISMA) was created within the Department of Electrical and Electronics Engineering to focus on research in advanced trends in Computational Intelligence and their applications. The Computational Intelligence Research Group at KIET explores engineering issues related to neural network, fuzzy systems and evolutionary computing. Neurofuzzy integrated system utilizes features of both Neural and Fuzzy networks together for better results by which we can easily generalize the unseen data from seen data by forming the fuzzy rules and training. A large number of highly interconnected processing nodes are connected through the weights in neural network.

The overall aim of the research for the developing applications of interdisciplinary nature for the benefit of the society at large and the same time provide frameworks for advancement of knowledge in the area. The following projects were funded by different agencies

- Project Title: “Facilitation of Medical Expertise in Cancer” Received \$ 897.00 by the IEEE Foundation, USA (Completed).
- Project Title: “To facilitate Medical Expertise in remote rural areas using the Intelligent Technique like virtual medical advice and assistance” Sanction Letter received by AICTE for Rs. 200000/-.
- Project Title :- “An approach based on principal component analysis and adaptive neuro-fuzzy inference system to diagnosis of diseases” Received Rs. 10,000/- from IEEE- All India Young Engineers’ Humanitarian Challenge (AIYEHUM-2012) (Completed).

#### **Two Research project submitted to IEEE foundation USA by this group titled as**

- Effect of Yoga on human being using EEG.
- Facilitation of on-line medical expertise in heart disease.

### **Associated Faculty Members**

Prof. Neeraj Kumar Gupta  
Prof. Sheetal Singh  
Prof. Alok Kumar Pandey  
Prof. Abhas Kanungo

### **Embedded System (ES)**

The term embedded systems is quite a complex one. Simply put, it is a combination of hardware and software that performs the component of a larger system. High-profile embedded chips are scalable, generate small amounts of heat, and consume less power. These are generally preferred for their speed, accuracy and reliability. As they are compact in size and ability to perform time-critical and task specific operations, embedded devices find application in all segments of industrial and commercial market places and home appliances.

In recent years, it became apparent that control systems as integral components of larger systems, should be developed and designed concurrently with mechanics, hydraulics, and electronics. It is important that engineers have a good understanding of the implications of software technology embedded into traditional engineering systems. Current machines consist of physical components providing the means and a control system employing those means to fulfill the machine's function. Together, they build up the controlled machine, which can also be called an embedded system. New innovative applications in different areas will make embedded systems as one of the fastest developing technology of the near future.

### **Associated Faculty Members**

Prof. Jyoti Srivastava  
Prof. Ruchika Singh  
Prof. D. Blandina Miracle  
Prof. Arun Kumar

### **Power System (PS)**

Power system research covers the topics like Energy Management Systems, Power system automation, Flexible AC Transmission Systems (FACTS), Restructured Power System Operation, Power Quality monitoring and analysis, Custom Power Devices, Renewable Energy Systems. High Voltage Engineering, Insulation Coordination, switchgear and various protection scheme, Treeing and Tracking Phenomena in insulation material, Condition Monitoring of Power Apparatus etc. Department is well equipped with various power system simulation software, experimental set-ups, measuring and analyzing devices, dedicated faculty members and expert technical staff.

### **Associated Faculty Members**

Prof. Rajiv Kumar Mehta  
Prof. Pradeep Katariya  
Prof. Ameer Faisal  
Prof. Anmol Gupta

Prof. Swati Singla  
Prof. Suneel Kumar

### **Renewable Energy (RES)**

A renewable research group in the department of electrical & Electronics Engineering is in the pace of exploring the recent trends in the field of renewable energy technology.

The Department is equipped with a demonstration setup of Solar PV Module ready to perform various experiments, A wind Energy Hardware Simulator ready to conduct research related work and a Dual Slope Solar thermal Still is also available for Study.

#### **Associated Faculty Members**

Prof. G Singh  
Prof. Yaduvir Singh  
Prof. Rahat Ullah Khan  
Prof. Shariz Ansari  
Prof. Mohd. Faisal Jalil

### **Communication System**

The Communication research group was created within the Department of Electrical and Electronics Engineering to focus on research in advanced trends in Communication engineering and their applications. Communication research Group at KIET explores engineering issues related to different communication schemes, their drawback and scope of improvement. Group also focus on various modes of communication like optical, wireless and 3G, 4G standards of mobile communication.

The overall aim of the research for the developing applications of interdisciplinary nature for the benefit of the society at large and the same time provide frameworks for advancement of knowledge in the area.

#### **Associated Faculty Members**

Prof. Brajesh Kumar Tiwari  
Prof. Swati  
Prof. Priyank Bharadwaj

### **Machines**

The Electrical Machine Group was created in the Department of Electrical and Electronics Engineering to focus on research in conventional electrical machines and also special machines, innovative controls using high efficiency drives and versatile control strategies and their applications. The Electrical Machine group at KIET explores engineering issues by analyzing the existing systems in MATLAB simulation and come up with proposals to improve the existing systems.

The overall aim of the research is to carry out simulation for complicated projects that might not be possible as real time projects for the benefit of the society at large and at the same time provide frameworks for advancement of knowledge in the area.

**Associated Faculty Members**

Prof. Yatendra Chaturvedi

Prof. Masood Rizvi

## **2014-15 PROJECT DETAILS**

### **Power Electronics & Drives (PED)**

#### **Project Topic**

1. Project on Designing of PWM Based Inverter
2. Application Multilevel Inverter in Drives Control.
3. Energy Saving In Electrical Drives.
4. Solar Inverter
5. 3-Phase Inverter Using MOSFET

### **Computation Intelligence & System Modelling Analysis (CISMA)**

#### **Project Topic**

1. Study on ECG Monitoring on Smart Phone using Intelligent Techniques.
2. An Intelligent Load Shedding using Fuzzy System.

### **Embedded System (ES)**

#### **Project Topic**

1. Design and Fabrication of Solarmeter.
2. Automated Phase Selector.
3. Study and Fabrication of Power Saving Module for Room Lights using Microcontroller.
4. Study of Three Phase Appliance Protector System using ICNE555.
5. Microcontroller Based LPG Gas Detector (GSM Module).
6. Brake failure indicator for four wheelers.
7. Analysis & Fabrication of Model for Street Light Controlling using Micro Controller.
8. Power Saving Solar Street Light with FOG Sensor for Lighting.
9. Food Spoilage Detector.
10. Defective Metal Detector and Rejector.
11. Smart Lighting System using Speed Breakers.
12. Smart Lighting System.
13. Automatic Street Light Control System using LED and LDR.
14. Micro Controller Based Body Relaxing Machine.
15. Microcontroller Based Smart House.

### **Power System (PS)**

#### **Project Topic**

1. Wireless Electricity Transmission.
2. Mini Hydroelectricity Generation.
3. Project on Design and Fabrication of Static MHO Relay.
4. Maximum Demand Controller.
5. Automatic Power Grid Controller.

## **Renewable Energy (RES)**

### **Project Topic**

1. Foldable Solar Panel Kit.
2. Small Scale Power Generation for Household use in Rural Areas.
3. Modelling & Simulation of Solar Photo Voltaic Array under different conditions.
4. Green Wind Energy for Rural Electrification.
5. Modelling Circuit Based Simulation of Photovoltaic Array And Its Analysis Under Partial Shaded Conditions.
6. Solar Inverter with auto Sun Tracking System.
7. Performance Analysis of 80W PV Module.

## **Communication System**

### **Project Topic**

1. GSM Based Street Light Automation.
2. GSM Based Automatic Energy Meter Reading System with Instant Billing.
3. Advanced Driver Assistance System.
4. Optical Fibre Based Home Security System (Proposed).
5. GSM Based Tracking and Monitoring System for Vehicles.

## **Machines**

### **Project Topic**

1. Labview Based Speed Control of DC Motor.
2. Speed Control of DC Motor by PWM Technique.
3. Vehicle Speed Control using Bluetooth.
4. Study and Analysis of Starting Current For Protection of Single Phase Induction Motor.
5. Speed Control of DC Motor Using Chopper.
6. Performance Analysis of Dual Mode DC Machine.
7. Design and Fabrication of DC Series Motor Starter.
8. Protection of Transformer Against Rise Temperature.
9. Protection of Induction Motor.
10. Design and Development of Rotor Resistance Controller for Speed Control of Slip Ring Induction Motor.
11. PID Based D.C. Motor Speed and Energy Management System.
12. GSM Based Street Light Automation.
13. GSM Based Automatic Energy Meter Reading System With Instant Billing.
14. Optical Fibre Based Home Security System.
15. GSM Based Tracking and Monitoring System for Vehicles.

## **2013-14 PROJECT DETAILS**

### **Power Electronics & Drives (PED)**

#### **Project Topic**

1. Comparative Analysis of Different Topologies of Inverter.
2. Design and Fabrication of Test Bench for Power Converters.
3. Performance Investigation of Modular PVECS.
4. Switching Loss Analysis for Power Converter Used in PVECS.
5. Design of Buck Boost Based Conversion System With Battery Charger.
6. Design & Fabrication of Multipurpose Convertor.
7. Inverter Topologies for PVECS.
8. Comparative Analysis of Different Topologies of Inverter.
9. DC-DC Converter Based on 3 State Switching for High I & V Step Down Application.
10. Hardware Implementation of Sine Wave Inverter.
11. Design And Fabrication of DC-DC Converter for Digital Portable Devices.
12. Design and Fabrication of Zero Voltage Switching DC-DC Converter.

### **Computation Intelligence & System Modelling Analysis (CISMA)**

#### **Project Topic**

1. Analysis of EEG Signal using Adaptive Neuro-Fuzzy Inference System (ANFIS).
2. Analysis of Electrical Signals using EEG in Brain Tumour with Fuzzy Logic and Neural Network.
3. Facilitation of Medical Expertise on Oral Cancer.

### **Embedded System (ES)**

#### **Project Topic**

1. Bottling Automation Using PLC.
2. Automation of Product Quality Control using PLC.
3. Intelligent High Power LED Street Light Control System.
4. Automatic Railway Gate Controlling and Signalling by using Microcontroller.
5. Power Factor Control using Microcontroller.
6. Microcontroller Based Bank Lockers Safety System.
7. Power Generation from Footsteps.
8. Automatic Fault Detection in Power Transformer using Microcontroller.
9. Speed Change of Fan With Temperature.
10. Solar Powered Electrostatic Cleaning Robot.

## **Power System (PS)**

### **Project Topic**

1. Hardware Simulator for Reactive Power Compensation.
2. Fault Analysis of a Grid System Using Matlab.
3. Automatic Phase Changer.
4. Auto Power Supply Control From Four Different Sources: Solar Mains, Generator, and Inverter to Ensure no Breakpower.
5. To Develop EHV- AC Hardware Simulator Design & Fabrication for Short Circuit Studies.
6. To Develop Hardware Simulator of EHV AC Transmission System.

## **Renewable Energy (RES)**

### **Project Topic**

1. Hardware Implementation of DC-DC Converter Based PVECS.
2. Performance Analysis of Solar Panel using Boost Converter.
3. Solar Cell Based Universal Inverter.

## **Communication System**

### **Project Topic**

1. Wireless Security System using Video Transmission.
2. GSM Based Controlling of Remote Irrigation System using Microcontroller.
3. Wireless Sensor Based Monitoring of Railway Signalling System.
4. Automated Car-Parking System.

## **Machines**

### **Project Topic**

1. Metro Train Prototype.
2. DC Motor Speed Synchronisation for Rolling Mills.
3. Speed Control of 3-Phase Induction Motor.
4. Design and Febracation of Multipurpose DC Machine.



## **2012-13 PROJECT DETAILS**

### **Power Electronics & Drives (PED)**

#### **Project Topic**

1. Speed control of DC motor using PWM Technique.
2. Hardware implementation of DC-DC converter.
3. Application DC-DC Multilevel converter for Speed control of I.M.
4. Design & fabrication of control circuit for 3-Phase VSI.

### **Computation Intelligence & System Modeling Analysis (CISMA)**

#### **Project Topic**

1. Adaptive control of wheelchair - "Intelligent Wheelchair".

### **Embedded System (ES)**

#### **Project Topic**

1. Automation of street light.
2. Green House Controller.
3. Electrical Home Appliances Control using RF module.
4. Controlling hybrid assistive knee using atmega 16.
5. GSM based automatic energy meter reading system.
6. Microcontroller based inverter.
7. Automatic Energy saver using microcontroller.
8. Temperature controlled fan using AVR.
9. Remote controlled surveillance vehicle.

### **Power System (PS)**

#### **Project Topic**

1. Power load economizer to prevent overloading using PLC Microcontroller.
2. Voltage stability analysis of EHV lines using series compensation.
3. Utilization of electrical distribution system for communication.
4. Automatic fault detection in assembly line production.
5. Compensation of long transmission line using thyristor controlled series capacitor.
6. Detection of Power Grid synchronization failure due to over voltage and frequency.
7. Energy Storage system in power system.
8. Microcontroller based protection relay.
9. Comparison of load flow methods for IEEE - 30 Bus system.
10. Study of impact of FACTS device on power profile of transmission system.
11. Optimization of ELD using PSO technique.
12. Single ended primary inductor converter analysis.

## **Renewable Energy (RES)**

### **Project Topic**

1. Performance Analysis of CUK converter for solar panel.
2. Renewable energy penetration in the union territory of lakshadweep islands.
3. Monitor and control of green house environment.
4. Solar inverter with visitor counter.
5. DC applications of solar energy.

## **Communication System**

### **Project Topic**

1. Cell phone based water pump controller.
2. Transient Analysis of DFIG based WECS.
3. Wireless speed control of AC fan.
4. GSM Mobile controlled home appliances.
5. Anti Colliding Device.
6. GSM based irrigation system using microcontroller.
7. Radio station (Transmitter).

## **Machines**

### **Project Topic**

1. Stepper Motor controlled Autonomous path tracer" without sensor.
2. Multi-transportation using linear induction motor.
3. Electromagnetic Analysis of electrical machines.