



# Annual Activity Report

(Year 2019)



## Centre of Excellence for Power Engineering Technologies & Clean Energy Integration (CEPET&CEI) & KIET IEEE Student Branch



### About CEPET&CEI

"Centre of Excellence for Power Engineering Technologies and Clean Energy Integration" is one of the centre of KIET Group of Institutions Ghaziabad established by Department of Electrical and Electronics Engineering in March 2019. It is one of centres in AKTU, working in power engineering applications included clean and renewable energy system technologies. The intention is to create a platform with multi-disciplinary environment for experts, researcher, academicians and students in power engineering and renewable energy worldwide. To accommodate this objective, the centre will provide an infrastructural facilities and environment to conduct experiments to understands knowhow, constraints and requirements of power engineering applications including clean/ renewable energy system technologies and produce research outcomes/solutions with societal benefits. This platform will also provide a channel of communication to exchange the experiences and ideas at global level through technical programme such as training, workshops, seminars, expert talks, schools and FDPs.

### Key Facilities and Research Setups

31X23 Ft. air-conditioned large floor space for research activities; Single-Phase and Three-phase AC electrical power supply systems (10 kVA loading capacity); Dedicated 15X8 Ft. computer lab for soft computing and simulations; Uninterrupted power supply system; ICT based class room for conduction of FDPs/STTPs/SDPs/Tutorials (max. 20 person); Opal-RT Real-Time Digital Simulator (with HIL capabilities); Electrical Drives and Machines; DSP Trainer Kits; Digital Storage Oscilloscope TPS 2014, 100MHz 4 isolated channel color display; Eco-Sense Hardware Simulator for PV Energy Conversion System; Hardware Simulator for PMSG based Wind Energy Conversion System; dSpace; Power Quality Analyzers with data logging facility; 3.2kWp Roof Top Solar PV Panels, Application Software, MATLAB, DigSilent Power Factory, PVSyst; Single phase and three phase constant power and dynamic loads; PCBs Fabrication (CNC) and prototyping machines.

### Technical Committee

Dr. Neeraj Kumar Gupta, *Professor & Chairman*  
Dr. Brijesh Singh, *Associate Professor (Research) & Convener*  
Dr. Nitin Kumar Saxena, *Associate Professor (Research) & Member*  
Dr. Ramesh Singh, *Assistant Professor & Member*  
Dr. Ajeet Kumar, *Assistant Professor (Research) & Member*  
Mr. Kapil Gandhi, *Assistant Professor & Member*





### About KIET IEEE Student Branch

The IEEE KIET Student Branch (IEEE KIET SB) is the local institute level part of IEEE Uttar Pradesh Section. It consists of IEEE professional and students members who share technical interests and geographical proximity. The IEEE KIET Student Branch is continuously providing the scientific and engineering information on electrical, electronics, computer and mathematics to its members. It is also interested to provide advanced and modern theoretical and practical information to the associated members and provide a prerequisite background to the members for working in the area of design, development, manufacturing, and application of the safe, sustainable, reliable, smart engineering systems and services.

The IEEE KIET Student Branch Chapter's objective is to keep its members updated and competitive in the workplace and help them to grow both personally and professionally using necessary IEEE tools. The Branch has a clear target to increase the number of activities and expand the influence and number of members in consequent years. We invite you to join us and benefit from a world of invaluable information and support.

### Executive Committee

Dr. (Col) A. Garg, *Chief Patron & Director, KIET Group of Institutions*

Dr. Manoj Goel, *Patron & Joint Director, KIET Group of Institutions*

Dr. Neeraj Kumar Gupta, *Sr. Member IEEE and Founder KIET IEEE Student Branch*

Dr. Brijesh Singh, *Sr. Member IEEE and Branch Counsellor KIET IEEE Student Branch*

Dr. Ramesh Singh, *Member IEEE and Advisor KIET IEEE Student Branch*

Dr. Nitin Saxena, *Member IEEE and Advisor KIET IEEE Student Branch*

Mr. Vinay Raj Tripathi, *Chair KIET IEEE Student Branch*

Mr. Somu Gupta, *Co-Chair KIET IEEE Student Branch*

Mr. Raghav Gupta, *Secretary KIET IEEE Student Branch*

Mr. Lakshya Gautam, *Co-Secretary KIET IEEE Student Branch*

Mr. Samarth Shukla, *Treasurer*

Ms. Shubhanshi, *Web Master*

*Student Volunteers*

## About Events

The KIET IEEE Student Branch has organized various technical and social event during 2018-2019. The students and faculty members along with KIET administration have actively participated in all the event with full enthusiasm. The report summarizes and presents all the activities in sequential manner. The students and faculty members of department of Electrical and Electronics Engineering were celebrated various IEEE society days such as IEEE PES and PELS day, organized distinguish lecture series, different technical work shops in association with various industries such as OPAL-RT, MATHWORKS etc. Also, conducted number of guest lectures on different advanced topics. The details of these events are as follows:

### Distinguished Lecture Series (March 2019)

The Distinguished Lecture Series (DLS) has jointly organized by KIET IEEE Student Branch and KIET IEEE SIGHT Student Branch in association with the Department of Electrical and Electronics Engineering, KIET Group of Institutions Ghaziabad in the month of March 2019. Featured 12 Professors and Researchers around the world belonging from different Universities and Nationalities across the Globe were delivered and discussed various advanced topics with students. The purpose of the series was to incite discussion and debate about a range of topics and subjects related to policy issues focusing on earth, energy, and environment. The event was chaired by Prof. Neeraj Kumar Gupta, Head, Department of Electrical and Electronics Engineering, KIET and coordinated by Dr. Brijesh Singh, Department of Electrical and Electronics Engineering, KIET.

Speaker	Title	Number of Participants	Date	Venue
Prof. Brian A. Barsky University of California, Berkeley, USA	Simulating Human Vision and Vision Correcting Displays	IEEE Members: 06 Non IEEE Members: 50	3 <sup>rd</sup> March 2019	KIET Ghaziabad
Prof. Wahied G. Ali Abdelaal Engineering, Ain Shams University, Egypt.	Industry 4.0 & Internet of Things (IIoT)	IEEE Members: 06 Non IEEE Members: 35	6 <sup>th</sup> March 2019	KIET Ghaziabad
Prof. Jeyaprakash Chelladurai Lock Haven University Pennsylvania, Lock Haven PA 17745	L-systems models for obtaining different cellular, fractal and other interesting pattern	IEEE Members: 06 Non IEEE Members: 58	6 <sup>th</sup> March 2019	KIET Ghaziabad
Prof. Rafael Caldeirinha Instituto de Telecomunicações, Leiria, Portugal	3-D Radio Coverage Tool for Mission-critical Operations in Highly Dense Forest Areas Under Wildfire Environments - the Portuguese RESCUE- TOOL Project	IEEE Members: 06 Non IEEE Members: 53	6 <sup>th</sup> March 2019	KIET Ghaziabad
Prof. Dilip Kumar Sharma Vice Chairman IEEE UP Section, India	The Emerging Opportunity in IEEE Technically Sponsored International Conference on Contemporary Computing and Informatics	IEEE Members: 06 Non IEEE Members: 35	6 <sup>th</sup> March 2019	KIET Ghaziabad
Dr. Cher Ming Tan Chang Gung University, Taiwan	How things fail and why do we bother about it	IEEE Members: 06 Non IEEE Members: 24	8 <sup>th</sup> March 2019	KIET Ghaziabad
Prof. Álvaro Rocha University of Coimbra, USA	Psycho social therapies through mobile phones – A case study in Galicia, Spain	IEEE Members: 06 Non IEEE Members: 37	8 <sup>th</sup> March 2019	KIET Ghaziabad
Dr Pavel Loskot Swansea University, UK	Internet trend	IEEE Members: 06 Non IEEE Members: 70	10 <sup>th</sup> March 2019	KIET Ghaziabad
Prof. Madhu Chandra Technische Universität Chemnitz, Germany	Physical foundations and Applications of Present day Microwave Radar Remote Sensing	IEEE Members: 06 Non IEEE Members: 53	12 <sup>th</sup> March 2019	KIET Ghaziabad

Dr. Hossein Asghari Loyola Marymount University in Los Angeles	Photonic real-time instruments	IEEE Members: 06 Non IEEE Members: 45	13 <sup>th</sup> March 2019	KIET Ghaziabad
Prof. Byonghyo Shim Seoul National University, South Korea	Ultra-reliable and low latency Communications (URLLC) in 5G	IEEE Members: 06 Non IEEE Members: 35	13 <sup>th</sup> March 2019	KIET Ghaziabad
Mr. Saket, ISIE India	Advances in E-Vehicle	IEEE Members: 06 Non IEEE Members: 32	26 July 2019	KIET Ghaziabad

#### Image Gallery of DLS



#### Workshops and Social Activities

Events	Number of Participants	Date	Venue
One day workshop on “E-Vehicle Technologies” in association with Imperial Society of Innovative Engineers Noida. The event was coordinated by Dr. Brijesh Singh, Department of Electrical and Electronics Engineering, KIET.	IEEE Members: 03	26 <sup>th</sup> July 2019	Center of Excellence PET&CEI, KIET Ghaziabad
One day workshop on MATLAB Signal Processing & Image Processing in association with MATHWORKS. The event was coordinated by Dr. Brijesh Singh, Associate Professor, and Prof. Kapil Gandhi, Department of Electrical and Electronics Engineering, KIET.	IEEE Members: 06 Non IEEE Members: 12	8 <sup>th</sup> January 2019	KIET Ghaziabad
One day workshop on Real-Time Simulation and Applications in Power Engineering Technologies in association with OPAL-RT. The event was coordinated by Dr. Brijesh Singh, Department of Electrical and Electronics Engineering, KIET.	IEEE Members: 06 Non IEEE Members: 17	10 <sup>th</sup> January 2019	Center of Excellence PET&CEI, KIET Ghaziabad
One day workshop on “PCB Design Software & Tools” in association with Altium India. The event was coordinated by Prof. Ramesh Singh, and Prof. Kapil Gandhi, Department of Electrical and Electronics Engineering, KIET.	IEEE Members: 06 Non IEEE Members: 10	9 <sup>th</sup> February 2019	KIET Ghaziabad
KIET IEEE Student Branch Orientation and Membership Drive along with other orientation programmes for first year B. Tech students. The event was coordinated by Prof. Ajeet	IEEE Members: 01 Non IEEE Members: 60	5 <sup>th</sup> August 2019	KIET Ghaziabad

Singh, Department of Electrical and Electronics Engineering, KIET.			
Two day workshop on Real-Time Simulation and Applications in Power Engineering Technologies in association with OPAL-RT and technically sponsored by IEEE PES/IAS Joint Chapter Uttar Pradesh Section. The event was coordinated by Dr. Brijesh Singh, Prof. Kapil Gandhi and Prof. Ramesh Singh, faculty members of the Department of Electrical and Electronics Engineering, KIET.	IEEE Members: 06 Non IEEE Members: 30	08 <sup>th</sup> and 9 <sup>th</sup> July, 2019	Center of Excellence PET&CEI, KIET Ghaziabad
Plantation and Promotional talk on PES Day Celebration. The event was coordinated by Dr. Brijesh Singh, Department of Electrical and Electronics Engineering, KIET.	IEEE Members: 06 Non IEEE Members: 15	22 <sup>nd</sup> April 2019	KIET Ghaziabad
<p>Seminar on IEEE PELS Day and following topics were discussed in seminar</p> <ol style="list-style-type: none"> <li>1. Importance of Power Electronics and PELS by Prof. Neeraj Gupta, HOD, EN Department.</li> <li>2. State of Art of INVERTERS by Mr Somu Gupta, 4th-year student EN department</li> <li>3. Applications and Advancements in Power Electronics by Prof. Ramesh Singh, faculty EN Department</li> <li>4. Advantages and Importance of Different IEEE Societies, Prof. Ajeet Kumar Singh, faculty EN Department.</li> </ol> <p>The event was coordinated by Prof. Ramesh Singh, Department of Electrical and Electronics Engineering, KIET.</p>	IEEE Members: 05 Non IEEE Members: 40	20 <sup>th</sup> June 2019	Department of EN KIET Ghaziabad

#### Image Gallery of Workshops and Social Activities



**Summer Internship Programme**  
**On**  
**Advance Power Engineering Technologies, Instruments and Green Energy**  
**(June 12-July 09, 2019)**

**Organized by**  
**Center of Excellence for Power Engineering Technologies and Clean Energy Integration (CEPET&CEI)**  
**Department of Electrical & Electronics Engineering**  
**KIET Group of Institutions, Ghaziabad, Uttar Pradesh-201206, India**

*Technically Sponsored by*



*Technical Partner*



The Centre of Excellence for Power Engineering Technologies and Clean Energy Integration (CEPET&CEI), Department of Electrical and Electronics Engineering, KIET Group of Institutions Ghaziabad, India has organized a Summer Internship Programme on Advance Power Engineering Technologies, Instruments and Green Energy during June 12-July 09, 2019 in association with OPAL-RT Technologies. The programme is technically sponsored by IEEE PES/IAS Joint Chapter UP Section. The objective of this event was to provide hands-on experience and improve problem-solving ability of students in the relevant area. The students' will be able to design and develop some research models based on power engineering technologies including green energy system. These are the following weekly activities were conducted during the internship program.

**Week 1: 12<sup>th</sup> June 2019 to 18<sup>th</sup> June 2019**

The inaugural of the internship programme was organized on dated 12th June 2019. The event was started by the address of Dr. Neeraj Kumar Gupta, Professor and Head, Department of Electrical and Electronics Engineering, KIET. Dr. Gupta has discussed a number of topics with students such as technical challenges in power system operations, use of advanced learning, application of soft computing and AI in power engineering applications all given his blessing for the great success of the event. The Convener of the internship programme, Dr. Brijesh Singh, has given the vote of thanks to all participants and guests. He has also delivered an expert talk on "Power Engineering Technologies and Applications". Dr. Arvind Kumar Sharma, Additional Head, Prof. Ramesh Singh and Prof. Ajeet Singh, Mr. Anil Kushwaha, Mr. S. C. Sharma and students were participating in the event. Prof. Kapil Gandhi has delivered a talk on "Introduction to Renewable Energy Systems and Experiments" and discuss the basis of renewable energy resources and utilization for generating the electrical energy during 13th June to 18th June 2019.

**Week 2: 19<sup>th</sup> June 2019 to 25<sup>th</sup> June 2019**

In the second week of, the event, Prof. Kapil Gandhi has delivered a talk on "Solar Power Generation Systems" and conducted a number of experiments on solar PV research & training system during the 19th June to 21st June 2019. Prof. Ramesh Singh has delivered a talk on "Fundamental of Design and Fabrication of Electrical Systems" during 24th June 2019 and 25th June 2019.

**Week 3: 26<sup>th</sup> June 2019 to 02<sup>nd</sup> July 2019**

During the third week of, the event, Prof. Ramesh Singh has delivered a talk on "Advance Electrical Measurement Equipment" and conducted a number of experiments on various power engineering instruments such as digital storage oscilloscope, 1 $\emptyset$  and 3 $\emptyset$  power analyzers, variable frequency drive, and other measuring instruments from 26th June to 28th June, 2019. Also, Dr. Brijesh Singh has delivered a talk on "Introduction to Wind Power Plant" on dated 01st July 2019 and conducted a number of experiments on wind power simulator on dates 02nd July 2019.

**Week 4: 03<sup>rd</sup> July 2019 to 09<sup>th</sup> 2019**

Various other advanced topics such as smart grid, microgrid, energy storage, MATLAB modelling and simulation of hybrid microgrid, application etc. have also been discussed by students on dated 03<sup>rd</sup> and 04<sup>th</sup> July 2019. An industrial visit to NATIONAL INSTITUTE OF SOLAR ENERGY (NISE) GURUGRAM has also been organized by the department for students along with faculty members on dated 05<sup>th</sup> July 2019.

The experts from OPAL-RT, Mr. Biswjeet Rout and Mr. K. Hema Sekhar, Field Application Engineers has given guest talks on the application of real-time simulations in power engineering applications on dates 08<sup>th</sup> and 09<sup>th</sup> July 2019.

Various assignments, tutorials and quizzes have also been conducted in the event. The students were benefited from these sessions and top three students have also been identified by these assignments, tutorials and quizzes. By the last day of the event dated 09th July 2019, the Valedictory Session has organized. Dr. Brijesh Singh, Convener of the Internship, has informed that event was successfully conducted by organizing committee under the banner of IEEE PES/IAS Joint Chapter Uttar Pradesh Section in association with OPAL-RT Technologies. Dr. Singh informs that the participants were learned the various advanced topic and hand-on experience on different power engineering application tools and instruments. The participants have also understood that how to start some relevant project activities. The students have shared a number of project ideas in the field of renewable energy applications and decided to work in this area as per international standards such as IEEE. The internship certificates have been awarded to all participants and additional certificate of appreciation have been awarded to top three students of the event. Mr. Shashwat Dwivedi has achieved the First Position in the merit. Ms. Pragati Singh and Mr. Shubham Kumar Patel achieves Second and Third position in the event respectively. The certificates have been awarded by Dr. Neeraj Kumar Gupta, Head EN and Dr. Arvind Kumar Sharma, Additional Head EN. The programme has ended with vote of thanks to all participants and guests. Prof. Yaduveer Singh, Dr. Nitin Kumar Saxena, Mr. Anil Kushwaha and Mr. S. C. Sharma were also present at the event. The internship programme was coordinated by Prof. Kapil Gandhi, Department of Electrical and Electronics Engineering.

#### Image Gallery of Event





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