



NATIONAL ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to Anna University, Chennai.)
K.R.Nagar, Kovilpatti - 628 503.



JULY 2018

VOLUME NO 6

ISSUE 1

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

Hi Budding Technocrats,

New month; new beginning

New mind-set; new focus

New starts; new intentions

New results

We are so glad to publish the new Volume No. 6 of Issue 1 of our EEE Newsletter. We have now stepped into a new island of knowledge, power and enthusiasm. This month July holds a pride of electrical engineer John Hopkinson's birthday, a British physicist and electrical engineer who worked on the application of electricity and magnetism in devices like the dynamo and electromagnets. Hopkinson's law (the magnetic equivalent of Ohm's law) bears his name.

Leaders are not born and they are made.

So we budding engineers let's start the month with a spirit and goal that we become leaders and masters of electrical engineering.

I wish you a Jubilant July!!!!

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STAFF ACTIVITIES/PUBLICATIONS/ACHIEVEMENTS**ACTIVITIES:**

S.No.	Name of the Staff	Events/Guest Lecture	Topic/Event	Date	College/ Company
1.	Dr.M.Willjuice Iruthayarajan, Professor/EEE and Mr.M.Sivapalanirajan, AP/EEE	QIP of AICTE Sponsored	Applied Optimal Control and State estimation	02.07.2018 to 06.07.2018	IISc, Bengaluru
2.	Mr.M.P.E.Rajamani, Me.Sankarakumar, AP(SG)/EEE and Mr.M.Gengaraj, AP/EEE	QIP of AICTE Sponsored	Power semi conductor devices for power electronic converters	23.07.2018 to 27.07.2018	IISc, Bengaluru
3.	Mr.T.Sivakumar, and Ms.S.Balakiruthiha, AP/EEE	QIP of AICTE Sponsored	Mathematical Optimization Methods for Power Systems	18.06.2018 to 22.06.2018	IISc, Bengaluru
4.	Ms.J.Vinotha, Assistant Professor/EEE	Teaching Learning center	Induction Training programme for faculties	09.04.2018 to 06.05.2018	National Institute of Technology, Warangal
5.	Dr.R.V.Maheswari, Prof/EEE, Ms.S.Shunmugalakshmi and Mr.K.Kumar, AP/EEE	MHRD – TEQIP III Sponsored FDP	Advance Condition Monitoring Methods for Power Equipment	09.07.2018 to 14.07.2018	National Institute of Technology, Calicut
6.	Dr.L.Kalaivani, Professor/EEE	AICTE Sponsored FDP	Foundation Program in ICT for Education	08.03.2018 to 12.04.2018	National Engineering College
7.	Mr.P.Samuel Pakianathan, AP/EEE	Industry Know How		17.05.2018 to 22.05.2018	Associate Transformers private ltd, Dindigul

DEPARTMENT R&D ACTIVITIES:

1. **Dr.T.Piraisoodi** was completed his **Doctorate** in “*Design of controllers for critical process in thermal and Hydro power plants using evolutionary computational techniques*”, on 13.07.2018 under the supervisor of **Dr.M.Willjuice Iruthayarajan, Prof&Head/EEE**.
2. **Dr.N.B.Prakash** was completed his **Doctorate** in “*Study on computational intelligence based on image processing techniques for detection of retinal diseases in fundus images*”, on 21.06.2018.

PUBLICATIONS:

1. D. Selvathi, **N.B. Prakash**, V. Gomathi and G.R. Hemalakshmi, “Fundus Image Classification Using Wavelet Based Features in Detection of Glaucoma”, Biomedical & Pharmacology Journal, June 2018. Vol. 11(2), p. 795-805
1. **G. Kannayeram**, P. S. Manoharan, **M. Willjuice Iruthayarajan**, **T Sivakumar**, “Tuning of Unified Power Flow Controller (UPFC) using PSO and NSGA-II Investigations”, Journal of Electrical Engineering, Vol.18, Issue 2, pp. 488-495, 2018.
2. **G. Kannayeram**, P. S. Manoharan, **N. B. Prakash**, “PI-tuned UPFC damping controllers design for multi-machine power system” Journal of Measurements in Engineering, Vol. 6, Issue 2, pp.81-92, 2018.
3. **Dr.M.Ravindran**, “Data Acquisition System for real time monitoring in Windmill”, 3rd International conference on Advancement in Engineering Applied Science and Management (ICAEASM-2017), Center for development of advanced computing, Juhu, Mumbai, 20th August 2017.
4. K.BalaMurugan, **Dr.M.Willjuice Iruthayarajan**, **M.Bakruthen**, presented a paper titled, “Analysis of thermal deterioration and decomposition of oil impregnated NomexA paper”, Second National power Engineering research scholars conference (NPERSC), IIT Chennai, 24 – 25th Feb 2018.
5. **Mr.T.Siva Kumar and Mr.S.Sankarakumar**, presented a paper titled, “Modelling and Tracking of maximum power point in solar cells using P&O algorithm”, International conference on Electronics, Communication and Aerospace Technology (ICECA 2018), RVS Technical Campus, Coimbatore, March 2018.
6. **Mr.T.Siva Kumar and Mr.S.Sankarakumar**, presented a paper titled, “Performance analysis of multicarrier sine PWM based cascaded H-Bridge multilevel Inverter”, International conference on trends in Electronics and Informatics (ICOEI 2018), SCAD college of Engineering and Technology, May 2018.
7. R.Sritharan, **M.Sivapalanirajan**, **M.Willjuice Iruthayarajan**, “Mathematical Modeling and control of QNET Rotary inverted pendulum in MATLAB and real time implementation in LabVIEW using ELVIS”, International Conference on Inventive Communication and Computational Technologies ICICCT 2018, Ranganathan Engineering College, Coimbatore, April 2018.

ACHIEVEMENTS:

The following Staff members have certified in *NPTEL Online Certification Course* for the Academic year 2017-2018.



Mr.G.Kannayeram
Power System
Engineering



Mr.R.Muniraj
Automatic Control



Ms.K.Gowthami
Microprocessors and
Microcontrollers



Ms.S.Shunmugalakshmi
Better Spoken English



Mr.T.Sivakumar
Power System
Engineering



Mr.S.Sankarakumar
Basic Electronics



Mr.K.Kumar
Power System
Engineering



Ms.S.Jayanthi
Power System Engineering



Mr.B.Venkatsamy
Microprocessors and
Microcontrollers

NON-TEACHING STAFF MEMBERS:**ACTIVITIES:**

S.No.	Name of the Staff	Topic/Event	Date	College
1.	Mr.S.BalaMurugan, Lab Technician/Control and Instrumentation Laboratory	PIC Microcontroller programming and applications	11.06.2018 to 14.06.2018	Advanced Training Institute (ATI), Chennai
2.	Mr.G.Ramachandran, Lab Technician/Electrical machines Laboratory	Protective relays, circuit breakers and switchgear protection	04.06.2018 to 08.06.2018	
3.	Mr.K.Subburaj, Lab Technician/High Voltage laboratory	Importance and application of electrical safety at workplace and first aid	02.07.2018 to 06.07.2018	

DEPARTMENT ACTIVITIES

EEE ASSOCIATION – INAUGURAL FUNCTION

On taking these words as inspiration, EEE association helps all emerging engineers to expertise themselves from now on with various technical and non-technical classes that deepens their knowledge, sync them with the modernized world and intensify his/her mastery over the various concepts by numerous activities.

The department of Electrical and Electronics has successfully stepped into its (21st year) of inaugural function of EEE ASSOCIATION. This markable event held on 11/07/2018 at our Auditorium, NEC by 10:00 am.

The Inaugural function began with TamilthaiValthu song. Welcome address was given by Mr. C.V.Suryakumar, Secretary, EEE Association and then Presidential address delivered by Dr.N.B.Prakash, Associate Professor, EEE and then year plan was read by Mr.M.Jothibas Treasurer, EEE. Introduction to chief guest was delivered by Mr.K.Subash Joint Secretary. Honoring the Chief Guest by Dr.Kn.K.S.K.Chockalingam Director and Dr.M.Willjuice Iruthayarajan, HOD/EEE. The inaugural was lead by chief guest **Mr.P.Srinivas Prakash, Director, MOXIE Infratech Pvt, ltd, Chennai.** The chief guest then asked the students to have a strong grip over the basics of what they had learnt. He also insisted everyone to develop good contact with all college friends and participate in paper presentation, symposium and various colleges to gain exposure and knowledge. He then launched the video for the event and finally, the vote of thanks was given by Ms.M.Sonia (III EEE) and came to an end with National Anthem.



SPECIAL INTEREST GROUP

CONTROL AND INSTRUMENTATION



EEE department Control and Instrumentation Special Interest Group (SIG) conducted a technical seminar on the topic **“PID CONTROLLER TUNING”** on 7th July 2018 in the EEE department, Control and Instrumentation Laboratory. The resource person for the program was E.Anitha AP/EEE.

She gave a brief introduction about PID controller and its effects. She explained the step by step procedure to tune the PID controller values by Ziegler Nichol's Method.

Students were instructed to design PID controller for individual Transfer function. After the theoretical calculation of K_p , K_i and K_d values, the students were provided with the MATLAB software. They viewed the open loop and closed loop response of their transfer function they viewed the closed loop responses for different reference values and achieved the desired response.

13 number of prefinal year students of EEE attended the seminar for updating the knowledge in Controller Tuning. The technical seminar was concluded with the discussion of students and the resource person

EMBEDDED SYSTEM



An introduction to **“INTERNET OF THINGS”** was given by **Dr.N.B.Prakash, Associate Professor/EEE**, at Seminar hall for Special Interest Group (SIG) members.

Dr.N.B.Prakash, Associate Professor/EEE, gave an introduction to Internet of Things (IoT) and its applications. Then, the development of technologies associated with IoT in the current scenario was discussed. Finally, the session was concluded with an introduction to python programming in IoT.

The session was started by 10.00 AM and completed by 01.00 PM. Totally, 40 students from third year and final year were participated and got the relevant information about technology updation from our Embedded System SIG.

HIGH VOLTAGE ENGINEERING

A laboratory session on **“Study on Properties of Liquid Insulation”** was conducted on 07.07.2018 by **Mr. P. Samuel Pakianathan, Assistant Professor /EEE**. Time: 10.00 to 11.15 AM at Liquid Dielectrics Laboratory for Special Interested Group (SIG) members. The objectives of the session were:

- To impart importance of liquid insulating medium in high voltage apparatus
- To provide practical exposure in experimentation for analyzing the properties of liquid insulating medium

Initially he gave a brief history on liquid insulation and its development

In this session, he demonstrated the following experiments with liquid insulating medium as per the standards to estimate the ability of liquid insulation for the applications in high voltage apparatus.

A seminar on “Modeling of FEM Analysis and Recent issues in High Voltage Engineering” was conducted on 07.07.2018 by **Mr.B.Vigneshwaran, Assistant Professor /EEE** Time: 11.30 to 12.45 PM at Class Room H6 for Special Interested Group (SIG) members. The objectives of today’s session are:

- Recent ongoing research on High Voltage Engineering
- Effect of Electric field and potential distribution in electrical power apparatus
- Basic modeling of insulators in COMSOL Software

Initially he started with the definition of partial discharge and their important role in the prediction of life data analysis of electrical power apparatus which is operated in high stress. Then he gave a brief history about the necessity and role of modeling an electrical apparatus in FEM analysis. After that he discussed about the recent trends & ongoing research in high voltage engineering field.

The session was started by 10.00 AM and completed by 12.45PM. Around 15 students from third year were participated and got the relevant information about the recent trends in high voltage engineering.

POWER ELECTRONICS & DRIVES

A seminar on “Future on power electronics for wind turbine system” was conducted on 07.07.2018 by **Miss. J.Vinotha, Assistant Professor /EEE** at Class Room H4 for Special Interest Group (SIG) members.

The objectives of the session are:

- Recent ongoing research on wind energy conversion system(WECS)
- Effect of Power electronics in wind energy resource
- Types of generators used in wind energy conversion system

The session started with the overview of WECS and brief introduction about the types of wind turbine and generators. Then discussed about the principle & operation of WECS and its power generation and also about the major issues facing by USA in wind power generation.



The session was started by 10.00 AM and completed by 12.30PM. Totally 11 students from third year were participated and got the relevant information about the wind turbine system and its scope.

POWER & ENERGY ENGINEERING

The objectives of the session are:

- To give an introduction about Smart Grids and its importance in power systems.
- To provide an outline about the evolution of Smart Grids.
- To discuss about the conceptual model of smart grids and its applications.

The Sessions were handled by **Ms. S. Balakiruthiha, Assistant professor/EEE.**

Session-I (10.00AM – 11.15PM)

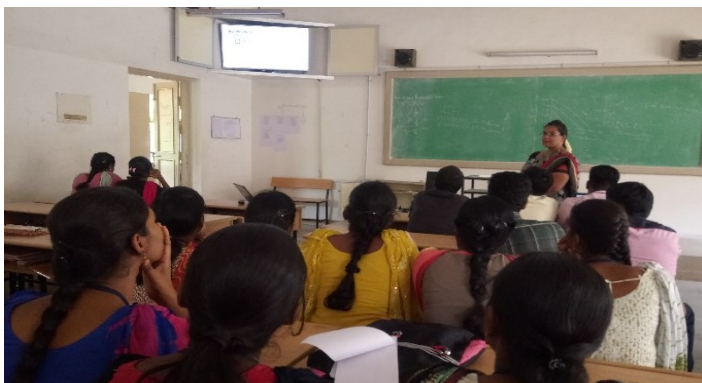
A general introduction about Smart Grids was given in the Session I. The topics in the session covers,

- Basic outline of Smart Grids.
- Evolution of AMI and Smart Meters and Smart Grid.
- Comparing Smart Grid with traditional power system.

Session-II (11.30AM – 12.30PM)

The session II was continued after a 15minutes break around 11.30AM. The topics in this session covers,

- Conceptual Model of Smart Grids.
- Technology drivers and applications of Smart Grids.



The sessions were started by 10.00 AM and completed by 12.30 PM. Totally 27 students from third year and final year were participated.

SOCIAL AWARENESS CELL



As a part of Social Awareness cell of EEE department an awareness camp was conducted for Chatharapatti near kovilpatti students on 26.07.2018 in the topic “Electricity usage, conservation and safety”. The program was started with welcome address given by Saravanakumar (final year B). Followed by that the session was started by **Dr.M.Ravindran, Asso. Prof(SG)/EEE** with the importance of energy conservation.

Then he explains the importance of renewable over nonrenewable energy resources as renewable energies generate from natural sources that can be replaced over a relatively short time scale and he listed out the pros of using renewable energy. Following the session final year students explains the safety tips to be followed while handling electricity and also they put video demonstration and drama to deliver the content to the school students.

The session was coordinated by **Dr.M.Ravindran, Asso. Prof(SG)/EEE, Mr.K.Kumar, Asst prof/EEE, Mr.Subburaj**, technician along with lateral entry and NCC volunteers. Around 80 members attend the program and got benefited.

CONTROL AND INSTRUMENTATION

EEE department Control and Instrumentation Special Interest Group (SIG) conducted a technical talk on the topic “**Applications of LabVIEW in Control Engineering**” delivered as two sessions by **Mr.M.Sivapalanirajan** and **Mr.R.Muniraj** on 21/07/2018 at the control and instrumentation laboratory.

Session 1 (10.30AM to 11.45 AM)

Mr.M.Sivapalanirajan AP/EEE discussed the need of simulation platform for developing automated systems in industries. It was also discussed about the speciality of LabVIEW which is one such tool facilitates data acquisition and online control and monitoring of parameters. It is similar tool as compared to MATLAB on its tool availability and ease of utilization. More than that it makes way for industry ready engineer in the field of automation. Students were motivated to utilize the lab resource on LabVIEW based system and control. Some sample applications are discussed in LabVIEW.

Session 2 (12.00PM – 1.00PM)

Mr.R.Muniraj AP(SG)/EEE discussed the resource available in C&I lab like LabVIEW software, interfacing device ELVIS II+ and benchmark model Rotary inverted pendulum. He also motivated the students to participate in the short term course on LabVIEW for exploring project implementation in LabVIEW platform. He demonstrated some simple examples in LabVIEW for explaining the ease of using the platform.

EMBEDDED SYSTEM

An introduction to “**Field Programmable Gate Array**” was given by **Ms.A.Tamilarasi, Assistant Professor/EEE** on 21.07.2018 in Hall H6.

The objectives of the session are:

- FPGA vs Microcontroller
- Integrated Circuits Technology
- Introduction to VHDL
- Design of combinational circuits using VHDL



The presentation was started with the fundamentals of FPGA. The difference between FPGA and Microcontrollers was discussed with the students. Then she briefly explained about Field Programmable Gate Array (FPGA) and its real time applications. Hardware complexity in the existing methodology and its improvement with the use of Hardware Description Language was also explained by her. Finally, design of basic combinational circuits using VHDL was given as a practice to the students.

The session was started by 10.00 AM and completed by 12.30 PM. Totally 25 students from third year were participated and got the relevant information about FPGA and its real time applications along with programming knowledge.

HIGH VOLTAGE ENGINEERING

SIG-high voltage engineering was conducted on 21.07.2018 in lecture hall 4. The session was handled by Mr.K.Kumar AP/EEE by 10.00AM on the topic *“Testing techniques and dielectric response of outdoor insulators”*. Initially he explained that the definition of high voltage are based on safety considerations or the voltage where arcing will occur. Then he classify the voltage levels as,

- ✓ Low Voltage - upto 1000V
- ✓ Medium Voltage - 1000V to 35kV
- ✓ High Voltage - 35kV to 230 kV
- ✓ Extra High Voltage - above 230 kV.
- ✓ Ultra High Voltage - above 800 kV.

Followed by that he pointed out the special features of high voltage as follows.

- ✓ Lightning discharges are the only known “natural” form of high voltage.
- ✓ On the other hand, all other forms of high voltage are man-made or “synthetic” to fulfill specific goals.
- ✓ The first-and, by far, the best known-mode is the use of high voltage in electric power transmission to avoid excessive line currents which would render the transmission system uneconomical.
- ✓ For a given power, a higher voltage requires smaller current and, therefore, smaller conductor cross-sectional area and lower conductor costs.

Then he elaborately classified the types of insulators used for transmission and distribution purposes, the design, specification and the dimensioning of the insulator for that usage in an outdoor environment. Following that he compared the advantages, disadvantages and applications of porcelain, glass and polymeric insulators.

POWER ELECTRONICS & DRIVES

A seminar and hands-on on “Simulation of Power Converters using MATLAB Simulink” was conducted on 21.07.2018 by **Mr. Sankar N, Assistant Professor /EEE** at Class Room H5 for Special Interest Group (SIG) members.

The objectives of the session are:

- Introduction to MATLAB-Simulink
- Simulation of Power Converters using MATLAB Simulink
- Use of various blocks to measure input and output parameters like THD, Nth Harmonics, RMS and Average Voltage and Current.

The session started with the overview of MATLAB and brief introduction about the library browser and how to select and connect the blocks. The operation of half wave and full wave rectifiers, how to get the input and output parameters using various blocks in MATLAB Simulink was explained in detail.

Hands-on training was given to students using New Computer Centre and doubts were cleared. Instructed students to practice MATLAB in their free time using the provided facilities and to install MATLAB software in their personal laptops with the help of Lab-incharge.

The session was started by 10.30 AM and completed by 12.50PM. Totally 16 students from third year were participated and got hands-on training on power converters simulation using MATLAB Simulink.

POWER SYSTEM AND ENERGY ENGINEERING

A lecture on *“Distributed Generation”* was conducted on 21.07.2018 by **Ms.O.Supriya, Assistant Professor /EEE** at Class Room H3 for Special Interested Group (SIG) members.

The objectives of the session are:

- Overview of distributed generation
- Role of distributed generation in power market



At first the overview of distributed generation was discussed with the students. The differences between centralized generation and distributed generation were explained. Then the advantages of introducing distributed generation in power market and also their contribution to environment were discussed briefly. Finally, recent ongoing development in distributed generation was discussed

The session was started by 10.30 AM and completed by 12.30 PM. Totally 24 students from third year were participated and got the relevant information about distributed generation.

HIGH VOLTAGE LABORATORY VISIT

As a part to share our modern state-of-the-art facilities, 42 final year students accompanied by two faculties from K.L.N. College of Information Technology, Madurai visited our High Voltage Laboratory on 20.07.2018.



Session 1 (10.15AM -11.00 AM)

Venue - EEE Seminar Hall

Ms. A.M. Diffni Gomez AP/EEE gave a brief introduction about the High Voltage test set-up & Liquid Dielectrics Laboratory. Safety Precautions to be followed within the high voltage laboratory was detailed. Experiments which were to be demonstrated were also explained to the students during the session.

Session 2 (11.00AM -1.00 PM)

Venue : High Voltage Laboratory

The following experiments were demonstrated to the students by *DrS Senthil Kumar AP/EEE & Mrs T Bavisha AP/EEE* coordinated along with *MrSubburaj* Technician/EEE and *MrPooraja*, PG Scholar/EEE

1. Generation and Measurement of AC & DC Voltage using different configurations
2. Flashover & Withstand test on 11kV Glass Insulator
3. Liquid Dielectrics Laboratory – Breakdown Voltage Test, Viscosity, Flash point/Fire point

STUDENT ARTICLES

BLADELESS WIND TURBINES

Wind turbines have the power to contribute a major portion to defraying the world's energy budget. But they have some problems of their own, causing certain aesthetic and environmental concerns. A new design for bladeless wind turbines could resolve these issues and ultimately represent a more efficient method for power generation. Vortex Bladeless S.L is a Spanish tech startup that developed a multi-patented wind turbine without blades. Vortex's innovation comes from its unusual shape, where a fiberglass and carbon fibre mast oscillates in the wind taking advantage of the vortex shedding effect. At the bottom of the mast a carbon fibre rod moves inside a linear alternator that generates the electricity, with no moving parts in contact.

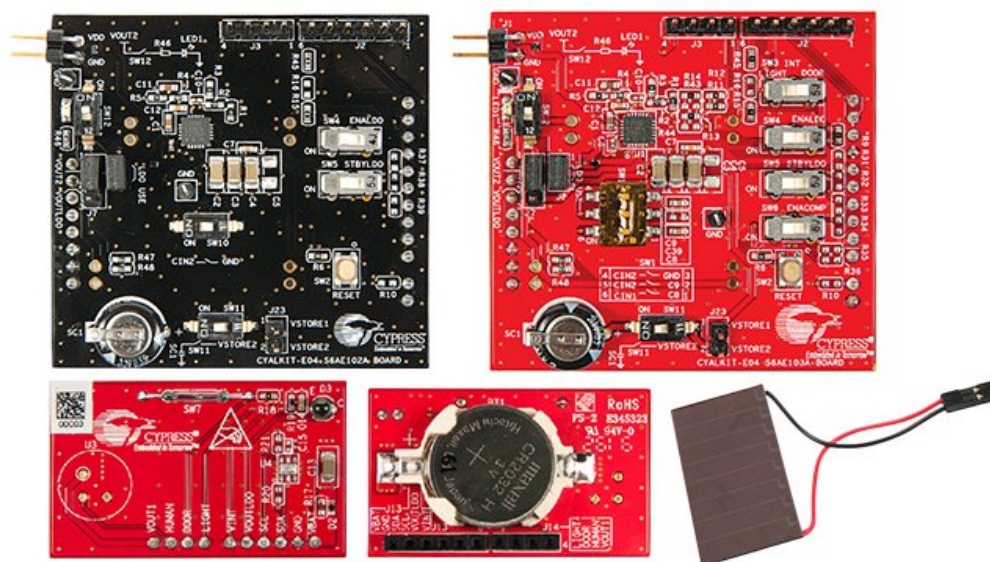


The conventional wind mills harness wind energy by the circular motion of a propeller and converts it into electricity via a transformer. Instead of capturing energy via the circular motion of a propeller, the Vortex takes advantage of what's known as vorticity, an aerodynamic effect that produces a pattern of spinning vortices. Once the structure starts vibrating, an alternator in the base of the device then converts the mechanical movement into electricity. Strong magnets are used to control the vibrations. The electricity generation system remains more or less the same. Vortex claims that energy produced by its turbines will cost around 40 percent less than energy made from wind turbines that are operating today. Since the Vortex doesn't have moving parts or gears, it last longer. The simpler design also means that manufacturing costs are about half that of a traditional wind turbine.

- Ms.T.LavanyaNarayani , IInd Year EEE

POWER MANAGEMENT IC

The Cypress S6AE10xA power management ICs helps you to design sensors and other low-power embedded devices that can be powered from ambient light. This could be an effective and fairly simple way to ensure that your device can operate longer than current battery technology allows. When photons strike a solar cell, their energy affects electrons in a way that leads to electric current (if a closed circuit is present). Unfortunately, the efficiency of the conversion process from light to electricity is relatively low. When solar cells are used indoors, limited available light combined with the inefficiency of photovoltaic devices makes solar energy harvesting inadequate in many cases. However, the S6AE10xA line of energy harvesting ICs consume incredibly small amounts of current (~ 280 nA) and can store energy from solar cells to run low-power sensor solutions. This allows designers to create wireless sensors that never need batteries consumption. So when light falls on a solar cell to provide current to the device, the S6AE101xA PMIC activates and delivers energy to the system. If the system is not active or additional energy is available at the input, the device stores the energy in a capacitor for later use.

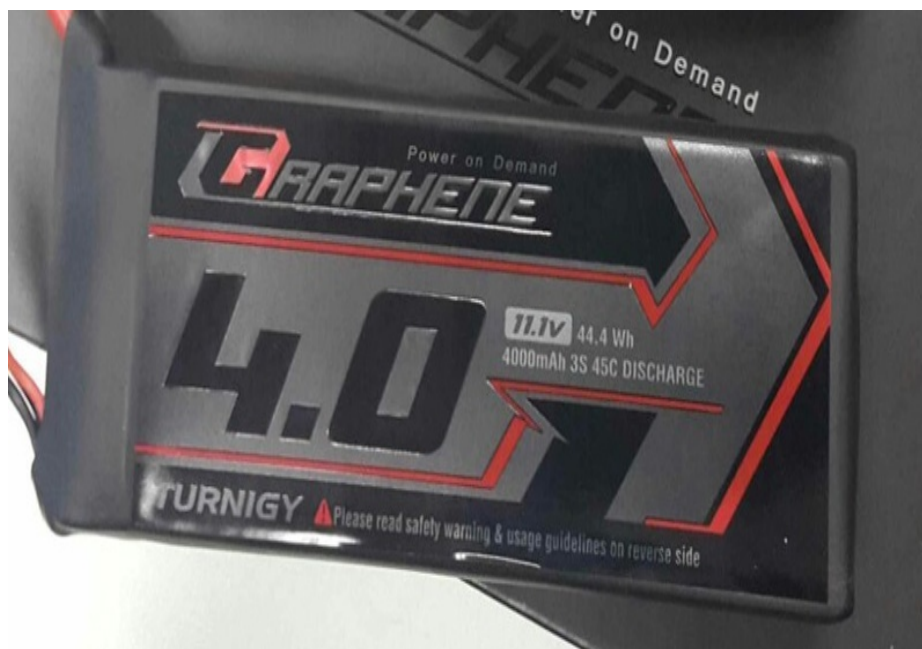


Energy from the solar cell is initially transferred to the capacitor connected to the VStore1 pin. When an upper voltage threshold is detected, energy is transferred from the small capacitor connected to the VStore1 pin to the super capacitor connected to the VStore2 pin. As the VStore1 capacitor voltage decreases due to charging of the VStore2 capacitor, it will eventually reach a lower threshold voltage and cease charging the super capacitor until the upper threshold is reached again.

-Ms.M.Menaka , IInd YearEEE

GRAPHENE BATTERIES

Graphene battery is a potent conductor of electrical and thermal energy, extremely lightweight, chemically inert, and flexible with a large surface area. It is also considered eco-friendly and sustainable, with unlimited possibilities for numerous applications. It is a sheet of carbon atoms bound together in a honeycomb lattice pattern. Conventional battery electrode materials (and prospective ones) are significantly improved when enhanced with graphene. Graphene can make batteries light, durable and suitable for high capacity energy storage, as well as shorten charging times. A battery based on the graphene ball material requires only 12 minutes to fully charge. It will further extend the battery's life-time, which is negatively linked to the amount of carbon that is coated on the material or added to electrodes to achieve conductivity, and graphene adds conductivity without requiring the amounts of carbon that are used in conventional batteries.



The structure of graphene battery technology is similar to that of traditional batteries, where two electrodes and an electrolyte solution are used to facilitate ion transfer. The main difference is the cathode in a conventional battery is purely composed of solid-state materials, but a composite-a hybrid material containing a solid-state metallic material and graphene is used as the cathode in a graphene battery. Li-ion batteries can be enhanced by introducing graphene to the battery's anode and capitalizing on the material's conductivity. In addition to revolutionizing the battery market, combined use of graphene batteries and super capacitors could yield amazing results, like the noted concept of improving the electric cars driving range and efficiency.

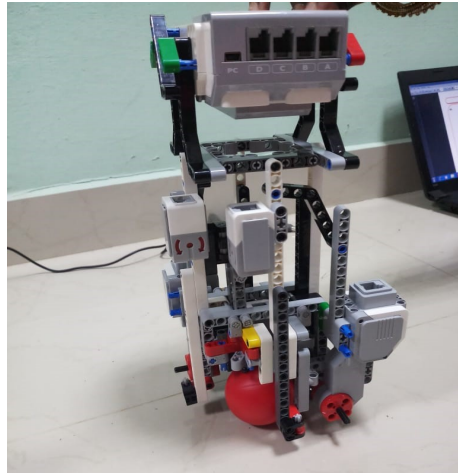
-Ms.A.Selvadevi , IInd Year EEE

STUDENTS EXPERIENCE IN INTERNSHIP

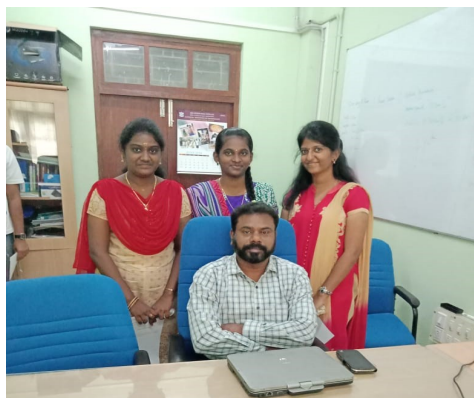
Hi Budding Engineers,

“Small Opportunities are often the Beginning of Great Achievements”

As per the quotes, we had a great opportunity of attending a fortnight of **Internship at National Institute of Technology, Trichy (NITT)**. It is one of the oldest institutions of the National institutes of Technology system. It is recognized as an institute of **National Importance by the Government of India** under the NIT ACT, 2007. The Robotics & Control Laboratory of **EEE department**, NITT conducted the programme. The programme was from June 4 to June 20, 2018. There were students from different college of EEE dept. We had an opportunity of working in the field of Robotics & Automation. We were guided by **Dr.V. Sankara Narayanan, Associate Professor/ EEE, NITT**. We worked on “A Monoball Robot Based on LEGO Mindstorms, EV3”



It gave us a wonderful experience of working in our field of interest. We had a chance of developing our knowledge in ROBOTC language, LEGO MINDSTORMS EV3, a platform for robotics. It was very useful to enrich our knowledge in the field of control system and robotics. We take this opportunity to thank **Dr.M.Willjuice Iruthayarajan, Professor & Head, EEE dept, NEC & Mr.R.Muniraj,AP(SG)/EEE, NEC** for helped us to attend this internship program.



A.Jothi Meena, K.Sethana Devi and S.SindhuMuhila,
Final year, EEE

TIME TO KNOW OUR ALUMNI



N. NIRMAL SINGH

33C2, Bright Street,
Water tank road,
Nagercoil-629001, K.K. Dist
Email: nirmalsingh_n@hotmail.com
nnirmalsingh@gmail.com
Mobile No.91 9944872101

CURRENT POSITION:

HOD/ECE Department, V.V. College of Engineering, Tisaiyanvilai,

Education

B.E., Electrical and Electronics

Engineering, April 1999, First class.

M.E., Applied Electronics, December 2000,
First class

Ph.D., Faculty of Engineering, December
2010

Dissertation Title:

***Vision Based Autonomous Navigation of
Mobile Robots***

Project funded by **University Grants**

Commission of India

National Engineering College, Manonmaniam
Sundaranar University, India

Hindustan College of Engineering, University of
Madras, Chennai, India

Jadavpur University, Kolkata, India

TECHNICAL ARTICLE – STAFF MEMBERS

Ms.A.M.Diffni Gomez, M.E.,

Assistant Professor

Electrical and Electronics Engineering

POLLUTION FLASHOVER ON INSULATORS

Electricity sector in India is growing at rapid pace. An extensive network of Transmission lines has been developed over the years for evacuating power produced by different electricity generating stations and distributing the same to the consumers. Depending upon the quantum of power and the distance involved, lines of appropriate voltages are laid. The nominal Extra High Voltage lines in vogue are ± 800 kV HVDC & 765kV, 400 kV, 230/220 kV, 110 kV and 66kV AC lines. The transmission lines are operated in accordance with Regulations/standards of Central Electricity Authority (CEA) / Central Electricity Regulatory Commission (CERC) / State Electricity Regulatory Commission (SERC).

In a developing country like India, in order to meet the growing demands of industrialization and urbanization, development of robust transmission system is crucial. With the increasing transmission line voltage up to 1200 kV, it is necessary to have proper outdoor insulators which provide sufficient mechanical support for the transmission line carrying thousands of MW of power and electrical isolation between line and the tower.

Insulators in the transmission network play a key role in transfer of power from the generation station to consumer end. Outdoor insulators are exposed to harsh environmental contaminations all through its service period. Increased number of trippings due to pollution flashover had been reported on both AC and DC transmission system in recent past.

With the rapid increase in sources of pollution such as burning of agricultural waste, pollution from vehicular traffic, increased construction activities commensurate with the development, industrial activity etc. the likelihood of the pollution flashover increases. Since pollution accumulation on the surface of the insulator is strongly environmental dependent, chances are high that the severity reported in the field might get higher over a considerable period of time.

The pollution layer in its dry form doesn't pose any threat to the system insulation. However, once it is wetted, it becomes conducting. The presence of conducting and partially conducting layer over the insulator surface will result in flashover. The pollution flashover persists unless and until the polluted atmosphere gets cleared, thus disturbing the stability and reliability of the entire power system and possibly leading to power block out.

The selection and dimensioning of outdoor insulators is an involved process; a large number of parameters have to be considered for a successful result to be obtained. System

requirements, environmental conditions of the site and insulator parameters are the essential inputs to be considered. Pollution severity measurements are used to measure the pollution levels prevailing in a particular site. As per IEC 60815, they are generally expressed in terms of

- ESDD and NSDD for type A pollution,
- Site equivalent salinity (SES) for type B pollution,
- DDGIS* and DDGIN* for both types

*DDGIS –dust deposit gauge index – soluble & dust deposit gauge index – non-soluble

It is endorsed to measure Site pollution severity (SPS), adopting a method mentioned in technical specification and recording over an appreciable period of time. For the purpose of standardization, five classes of pollution characterizing site severity are defined, from very light, light, medium, heavy, very heavy. The site equivalent salinity (SES) can also be validated by conductance measurement and surface leakage current measurement. Directional dust deposit gauge measurements are also employed to collect the pollution deposits. The method offers simplicity and the fact that it can be used at an un-energized site without insulators. The major disadvantage with the dust gauge is that actual insulators are not used and therefore it is not possible to assess the self-cleaning properties of insulators and the effect of the shed profile on the deposition process on the insulator surface. In case of DC energization, the accumulation of pollution is generally higher than that on an insulator for AC in the same environment.

Now ever days, Polymeric insulators have found increased application in outdoor insulation of highly polluted area due to their hydrophobic nature. The housing of the composite insulators is made from organic materials, mainly hydrocarbons which possess weaker electrostatic bond between it, which results in its hydrophobic nature. Standardization of added silicone and filler concentration in the rubber housing is required, so that the insulator have sufficient electrical and mechanical strength.

SELECTION OF INSULATOR

Two methods for artificial pollution test severity are in use: deterministic and statistical method. Deterministic approach has been widely used for the design of many electrical and mechanical components, apparatus, and systems. Typically, the insulation level is based on a worst-case analysis of site severity and safety factors to cover unknowns. Statistical dimensioning of insulators entails the selection of the dielectric strength of an insulator, with respect to the voltage and environmental stresses, to fulfil a specific availability requirement.

Hence, a correct insulator profile is required to enhance the withstand characteristics and to reduce the pollution build up. For the proper designing and dimensioning of insulator it is necessary to have sufficient knowledge of field conditions. The impact of environmental stress over the various insulator parameters should be studied by both on field and laboratorial investigations. Designing and selection of outdoor insulation with respect to prevailing environment will result in the optimized operation of Indian power system.

STUDENT IN-PLANT TRAINING DETAILS 2018

Sl. No	Student Name	Class	Company Name	Duration
1	B.Aarthy	III 'A'	NLC Tamilnadu Power Ltd, HarbourEstate,Tuticorin	11.05.2018 To 16.05.2018
2	N.SriAlemeluMangai	III 'B'		
3	T.Salomiya Paulin	III 'B'		
4	B.Vinitha	III 'B'		
5	R.Santhiya	III 'B'		
7	M.Sonia	III 'B'		
8	J.Sheeba	III 'B'		
9	R.Sangeethashorubha	III 'B'		
10	L.Malini	III 'B'		
11	S.J.Shanmugavel	III 'B'	NLC Tamilnadu Power Ltd, HarbourEstate,Tuticorin	21.05.2018 To 26.05.2018
12	K.Gandhimuthu	III 'A'		
13	T.Mahalakshmi	III 'A'	NLC Tamilnadu Power Ltd, HarbourEstate,Tuticorin	29.05.2018 To 02.06.2018
14	T.Mahalakshmi	III 'A'	DCW Limited, Sahupuram NLC Tamilnadu Power Ltd, HarbourEstate,Tuticorin	14.05.2018 To 18.05.2018
15	P.AnuKarthika	III 'A'	NLC Tamilnadu Power Ltd, HarbourEstate,Tuticorin	21.05.2018 To 26.05.2018
16	N.Nivedha	III 'B'		
17	M.Asmini	III 'A'		
18	P.Hemalakshmi	III 'A'	NLC Tamilnadu Power Ltd, HarbourEstate,Tuticorin	21.05.2018 To 26.05.2018
19	R.K.Gobiga	III 'A'		
20	V.Poorani	III 'B'		
21	Amritha.S	III 'A'	M/s.Ramco Cements Limited, R.R.Nagar	21.05.2018 To 26.05.2018
22	Abinaya.P	III 'A'		
23	S.A.Ashfaaq Mohamed	III 'A'	Kudankulam nuclear power plant	21.05.2018 To 26.05.2018
245	J.UthandRajan	III 'B'	Keltron Private Limited, Trivandrum	21.05.2018 To
26	T.Neelakandan	III 'B'		
27	K.Shunmuga Sundaram	III 'B'		
28	R.Solai Prakash	III 'B'		

29	R.SivaSorna Ram	III 'B'		25.05.2018
30	M.K.VijayaNainar	III 'B'		
31	A.K.Naveen Kumar	III 'B'		
32	M.Vijay Shanmugam	III 'B'	Kondass Automation Private Limited	21.05.2018 To 25.05.2018
33	L.Siva Balaji	III 'B'		
34	M.Gowthama Raj	III 'A'		
35	S.Supriya	III 'B'	The India cements, Sankarnagar	07.05.2018 To 12.05.2018
36	M.Vijayakumari	III 'B'		
37	A.Meenakshi	III 'A'		
38	S.Ariharan	IV 'A'	Suzlon Global service Limited	14.05.2018 To 25.05.2018
39	R.Aravindhan	IV 'A'		
40	S.Gopalakrishnan	IV 'A'		
41	M.Balakrishnan	IV 'A'		
42	N.Prasanna Venkatesan	IV 'B'		
43	E.Veeraputhiran	IV 'B'		
44	B.Uma	IV 'B'	Anuppankulam Sub-station, Sivakasi	14.05.2018 To 19.05.2018
45	G.Sindhuga	IV 'B'	Vetal Textiles and Electronics private limited, Coimbatore	21.05.2018 To 30.05.2018
46	S.Gopinath	IV 'A'	Ashok Leyland Limited, Chennai	
47	B.Surendran	IV 'B'	Sri Saastha Engineering Company, Aralvaimozhi	14.05.2018 To 18.05.2018
48	G.Viswanath	IV 'B'		
49	M.Rajalakshmi	IV 'B'	TANGEDCO Limited Kovilpatti Sub-Station	07.05.2018 To 12.05.2018
50	J.ArulSudhanya	IV 'B'		
51	S.Suriyakala	IV 'B'		
52	T.Sree vidya	IV 'B'		

	ChidambaraVadivoo		TANGEDCO Limited kayathar Sub-station	28.05.2018 To 01.06.2018
53	J.Sankari	IV 'B'		
54	K.Santhiya Lakshmi	IV 'B'		
55	S.ReshmaPriyadharsini	IV 'B'		
56	K.Shenbagadevi	IV 'B'		
57	J.Sankari	IV 'B'		
58	K.Santhiya Lakshmi	IV 'B'	Neyveli Lignite Corporation limited, Tuticorin	04.06.2018 To 08.06.2018
59	S.ReshmaPriyadharsini	IV 'B'		
60	K.Vishnu Priya	IV 'B'	Virudhunagar Electricity	14.05.2018 To 18.05.2018
61	S.LakshmiBrindha	IV 'A'		
62	K.Seetha	IV 'B'		
63	C.Gurunathan	IV 'A'		15.05.2018 To 26.05.2018
64	A.Bharathirajan	IV 'A'	Premier Enterprises	
65	M.Karan	IV 'A'		
66	M.Nandhini	IV 'A'	Chiranjjevi wind energy limited	19.05.2018 To 21.06.2018
67	S.Thanga Adhi Lakshmi	IV 'B'		
68	M.Rajashree	IV 'B'		
69	C.Shibana	IV 'B'		

INTERNSHIP DETAILS OF 2017-2018

Sl. No	Students Name	Company Name	Period
1	M.Mohammed Amjath Kani	Defense Avionics Research Establishment, Bengaluru	21.05.2018 to 25.05.2018
2	S.Muniraj		
3	C.K.Muthu Ram		
4	M.Ganesh		
5	K.N.Nagaarjun	LAMBDA Engineering and Technologies Pvt. Ltd., Bangalore	13/05/2018 to 24/05/2018
6	S.Arun Kumar		
7	S. Premsha		
8	C.V. Suryakumar		
9	C.Vikram	Apollo Transformers and Filters, Tirunelveli	5/05/2018 to 6/06/2018
10	D.Vishnu Moorthi		
11	K.Seenivasa Ragul		
12	A.Jothi Meena	National Institute of Technology, Trichy	04/06/2018 to 20/06/2018
13	S.Sindhu Muhila		
14	S.Sethana Devi		
15	Abishek.S		
16	Govinda Prasad.S		
17	B.Surendran	Sri Saastha Engineering Company	14/05/2018 to 4/06/2018
18	G.Viswanath		
19	Mathana Gopal B	TESSOLVE, Bangalore	8/01/2018 to 23/02/2108
20	Sritharan		
21	Prem Kumar.R	Data Patterns	-
22	G.Ajit Kumar	NHK Springs India Pvt. Ltd., Sricity	25/01/2018 to 02/02/2018
23	Anandhi.R	Kalasalingam University	1/06/2018 to 30/06/2018
24	Divya.D.R		

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