NATIONAL ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to Anna University, Chennai.)

K.R.Nagar, Kovilpatti - 628 503.

ESTD : 1984

EEE NEWS LETTER

FEBRUARY 2018

VOLUME NO 5 ISSUE 6

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

Dear cohort,

Happy February everyone!!!

February should be midget history month, after all it is the shortest month. From this month, may this newsletter bring a change in yours to progress. "The world hates change, yet it is the only thing that has brought progress" says a quote. You can expose your skills and can recall your past events here.

As we all are engineer, we should involve in this events. Being a good engineer make a difference. The difference between genius and stupidity is genius has its limits but stupidity doesn't have. All you need in life is ignorance and confidence to taste success.

To my final convey, scientists dream about doing great things, engineers do them.

Any work would never be successful until it has pros and cons. Anticipating your valuable feedback and queries.

Happy reading!!!

CONTENTS

STAFF ACTIVITIES/PUBLICATIONS/ACHIEVEMENTS

ACTIVITIES:

S.No.	Name of the Staff	Events/Guest Lecture	Topic/Event	Date	College/ Industry
1.	Mr. S. Senthil Kumar, AP/EEE Mr.P.Samuel Pakianathan, AP/EEE Mr. B. Vigneshwaran, AP/EEE	Short Term Course	Condition Monitoring of Electrical Apparatus	19th -24th February, 2018	IITM, Chennai

PUBLICATIONS:

- ✓ *R Nafeena,* ***M.Willjuice Iruthayarajan***, "Redundant placement of phasor measurement unit using multi objective evolutionary algorithms based on modified spectral clustering", Cluster computing https://doi.org/10.1007/s10586-018-1746-6, 2018. ***Impact Factor:*** 2.040

- ✓ ***BalaMurugan. K, Willjuice Iruthayarajan. M & Bakrutheen. M,*** "Analysis of Thermal Detoriation and Decomposition of oil Impregnated Nomex Paper", Second National Power Engineering Research Scholars' Conference (NPERSC - 2018) on 24th and 25th February, 2018.

- ✓ ***S. Balakiruthiha,*** *S. Kalyani,* "Optimal Bidding of Microgrid using Computational Intelligent Techniques", Second National Power Engineering Research Scholars' Conference (NPERSC - 2018) on 24th and 25th February, 2018.

INDUSTRIAL KNOW- HOW:

S.No	*Staff Name*	*Duration*	*Company*
1	Dr.M.Ravindran Asso. Prof.(SG) Mr.N.B.Prakash Asso. Prof.	13.2.2018 – 17.2.2018	Associated Transformers Private Limited, Dindigul.

SPECIAL INTEREST GROUP

EMBEDDED SYSTEMS

A hand on session on "***Simple Real Time Applications Using PIC Microcontroller***" was handled by ***Mrs.K.Gowthami, AP/EEE***, on 03.02.2018. The objectives of the session are:

- *Introduction to PIC microcontroller Board*
- *How to use MPLAB software*
- *How to download the embedded c code from the system to PIC microcontroller*
- *Function of I/O Ports*
- *Connecting I/O ports to LED's*
- *How to write embedded c code*
- *LED Blinking*
- *Alternate LED blinking*

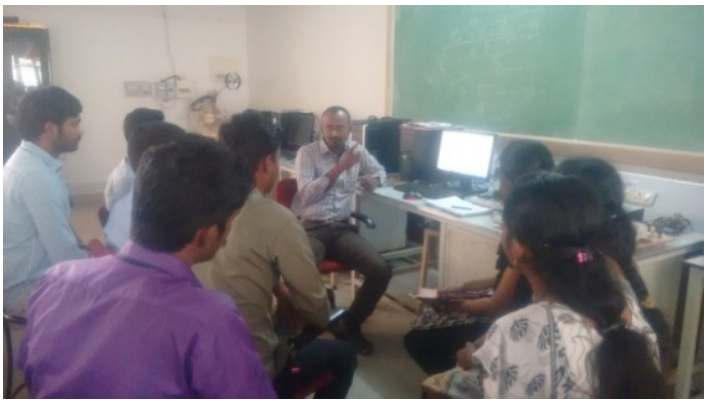
The session was started by 10.00 AM and completed by 12.30 PM. Totally 19 students from third year were participated and trained to interface external devices to PIC microcontroller.

CONTROL AND INSTRUMENTATION

EEE department Control and Instrumentation Special Interest Group (SIG) conducted a technical seminar on the topic **"*Rotary Inverted Pendulum: Modeling And Application*"**, on 03/02/2018 in the EEE department by ***M.Sivapalanirajan AP/EEE.***

The equipment QNET-Rotary Pendulum Board Compatible with ELVIS II+ was recently purchased of Rs. 3.5 Lakhs (app) in our C&I laboratory.

First session (10.00 AM to 11.30AM) was about the introduction of various types of Inverted Pendulum and its modeling ideas conducted in EEE Hall No.H5.



The application of the pendulum model for the analysis and design of real time implementation like Rocket launching and Human posturing robot are discussed with demonstration videos and clips. Students were motivated to work in modeling and control of Rotary Inverted Pendulum (RIP) model which is available in the Control and Instrumentation Lab.

Second session (12.00 PM to 12.50PM) was conducted as a practical demo of RIP in C&I lab. Students were motivated to work with the model based on either LabVIEW or MATLAB based simulation and implementation in LabVIEW ELVIS II+.

POWER SYSTEM & ENERGY ENGINEERING

The objectives of the session are:

- *To give an outline about microgrid and its importance in power systems.*
- *To understand how to solve problem in MATLAB using PSAT toolbox.*

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

Session-I (10.00AM – 11.15PM)

A general introduction about Microgridwas done in the Session I. The topics in the session cover,

- *Demand Supply scenario*
- *Blackouts and case study*
- *Basic outline of Microgrid and its types.*

Session-II (11.30AM – 12.30PM)

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

- *Power system Analysis Toolbox*
- *Problem Solving methods using PSAT*

The session was started by 10.00 AM and completed by 12.30 PM.

HIGH VOLTAGE ENGINEERING

A laboratory session on "***Study on Properties of Liquid Insulation***" was conducted on 03.02.2018 by ***Mr. M. Bakrutheen, Assistant Professor /EEE*** 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.

Also he explained the other equipment's such as ultrasonicator, magnetic stirrer, etc. and their uses in the laboratory for academic and research purpose. After that he discussed about the recent trends and ongoing research in liquid dielectrics. He suggested some of the area in liquid dielectric for IV year project.

POWER SYSTEM ENGINEERING

A seminar on "***Optimal Power Flow using Soft Computing Techniques***" was conducted on 17.02.2018 by ***Ms. S. Muthukumari, Assistant Professor / EEE*** at Hall No. H3 for Power System Engineering Special Interest Group (SIG) members.

The objectives of the session were:

- *To give an outline about Optimal Power Flow (OPF) and its importance in Power system.*
- *To impart the importance of Soft Computing Techniques in power system applications.*

Initially she gave a brief introduction on OPF problem. Then she discussed the mathematical modeling of OPF problem and various constraints involved in it. After that she gave an outline on soft computing techniques and its importance in power system applications. Finally she explained about solving the OPF problem using Particle Swarm Optimization algorithm.

SOCIAL AWARENESS CELL

As a part of Social Awareness cell of EEE department an awareness camp was conducted for ***Villiseripanchayat peoples, Kovilpatti*** on **02.03.2018** in the topic "Electricity usage, conservation and safety". The program was started with welcome address given by Naga Aravindh (Third year A). Followed by that the session was started by ***Dr. M. Ravindran,AssoProf(SG)/EEE*** with the comparison of renewable and non renewable energy sources and method of thermal power generation.

Following the session Final year along with their team explained the need of renewable energy sources and safety aspects to handle electricity. Final year and third year students play drama related to electricity conservation and safety. Also they put video demonstration to deliver the content to the people. The session was coordinated by M***r.K.Kumar, Asst prof/EEE, Mr.Subburaj***, technician along with lateral entry and NCC volunteers. Around 80 members attend the program and got benefited.

PLACEMENT DETAILS

On behalf of the Chairman, Managing Director, Director, Principal, Head of the Department and staff members, we heartily congratulates the final year students ***M/s. Infosys Private Ltd., Chennai,*** Campus drive during the month of February 2018.

M/s. Infosys Private Ltd., Chennai

Ms. G. Gowsalya Devi

Ms. M.Krishnashini

Ms. P.Pon sharmila

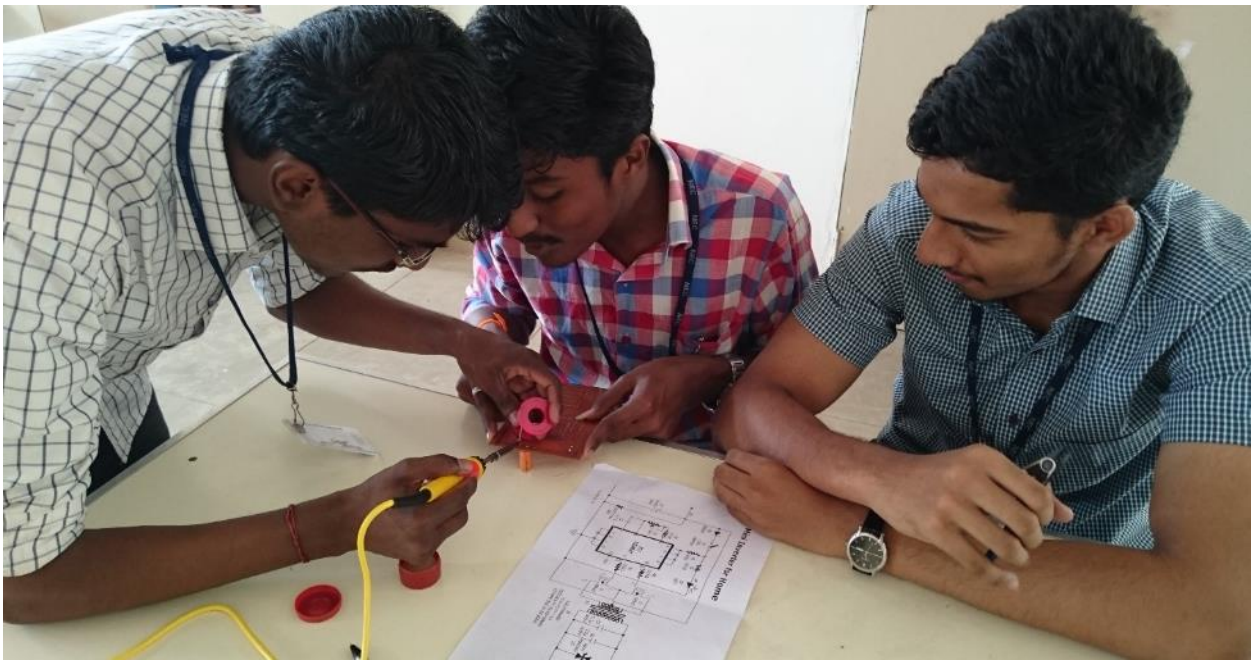
Mr.S. S.Siva Shankar

MINI PROJECT FORUM

MINI PROJECT Forum is functioning in EEE department for motivating students todo mini projects from III semester onwards. Around 180 students of EEE Department are members in the mini project forum of the Department.

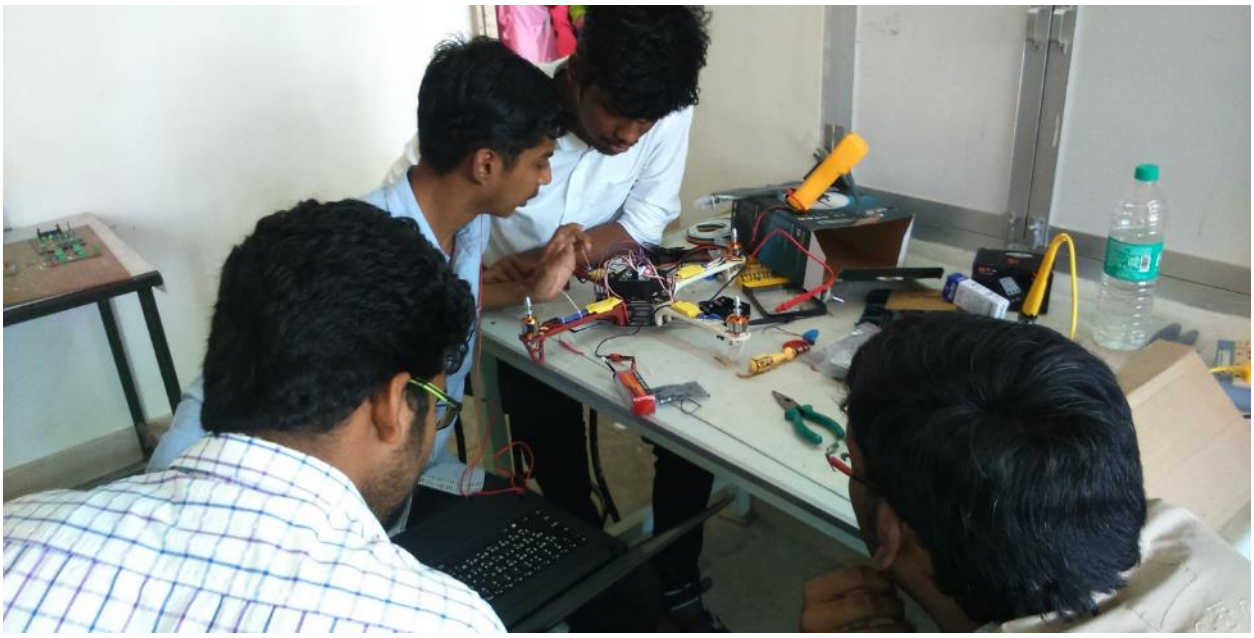
In this connection, a hands on session was conducted on the topic of **"Hands on training on PCB designing and implementation**" by Mr.B.Venkatasamy, AP/EEE and Mr.F.Antony Jeffrey Vaz, AP/EEEat applied electronics Lab of EEE Department on **16-12-2017**. Around **46 students** of second year EEE was participated in the hands-on session. The Session is started with the fundamentals and basic circuits in electronics which is useful for doing projects and about the selection of a project. Then the preparation of Printed Circuit Board (PCB) for some simple circuits such as power supply unit, IR based switch, mini inverter has been discussed. For each batch of students, a simple project circuit has been given and they have completed the PCB of their circuits in the afternoon session.

The **40 students** actively participated in hands on training on 'making of simple mini projects' conducted by the Mini Project Forum on **30-12-2017** at Microprocessor and Microcontroller Lab. The Students were trained on soldering practice and they soldered their own printed circuit boards and completed their circuit in morning session. Then in afternoon session, they finished PCB boards with wiring and rectified the faults and issues in the circuit boards and all the students experienced a hands-on training on error finding and rectification. The session was guided by Mr.B.Venkatasamy, AP/EEE and Mr.F.Antony Jeffery Vaz AP/EEE.



The students used to do mini projects during working Saturdays in the Microprocessor and Microcontroller lab of our department. Around **36 students** of second year EEEwas actively participated to do mini projects and completed some application-oriented projects like automatic street light control, Mini inverter, Water level controller, IR based remote controlled electrical apparatus etc. on **06-01-2018**.The students are motivated to do more innovative projects with their ideas. In this continuation, it is planned to conduct a project expo at the end of February 2018. The session was guided by Mr.B.Venkatasamy, AP/EEE, Ms. K. Gowthami AP/EEE and Mr. F.Antony Jeffery Vaz AP/EEE.

The **35 students** of second year EEE has involved in doing mini projects on **03.03.2018** at Microprocessor and Microcontroller Lab. The students selected their own projects using analog devices, microcontroller and various sensors like ultrasonic, IR, GSM etc. The students were trained to program in the microcontroller for their project using online resources. They have completed the connections as well as the programming part of the project in morning session of the day. Then in afternoon session, they experienced a hands-on training on error finding in program and correction. Also, the final year EEE students involved for making 'drone' and completed the hardware part. The session was guided by Mr.B.Venkatasamy, AP/EEE and Mr.F.Antony Jeffery Vaz AP/EEE.



ALUMNI DETAILS

Mr. C.CHANDRASEKAR

BATCH: 2000 -2004 (B.E-EEE) – National Engineering College, Kovilpatti

Current Status: DEPUTY MANAGER – NPD ELECTRONICS @ CRIPUMPS –FLUDYN ADVANCED TECHNOLOGY CENTRE, COIMBATORE NPD-NEW PRODUCT DEVELOPMENT

EXPERIENCE:

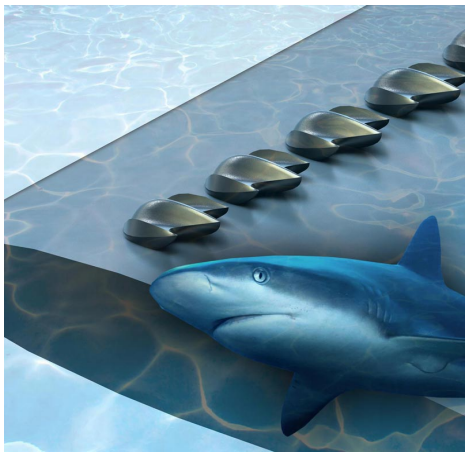
12+ experience in electronics & automated control systems of motors & pump sets with advanced technologies like IoT etc.

- DY. MANAGER -NPD ELECTRONICS (APR 2017 TO PRESENT)
- ASSOCIATE MANAGER -NPD ELECTRONICS (AUG 2015 TO MAR 2017)
- SENIOR ENGINEER – NPD ELECTRONICS (OCT 2012 TO JULY 2015)
- ENGINEER- NPD ELECTRONICS (DEC 2010 TO SEP 2012)
- JUNIOR ENGINEER –NPD ELECTRONICS (NOV 2008- NOV 2010)
- GET DESIGN-NPD ELECTRONICS (NOV 2006-OCT 2008)
- GET- ELECTRICAL MAINTENANCE (OCT 2005 – OCT 2006)

STUDENT ARTICLES

Using shark scales to design better drones, planes, and wind turbines

To build more aerodynamic machines, researchers are drawing inspiration from an unlikely source: the ocean. A team of evolutionary biologists and engineers at Harvard University, have shed light on a decades-old mystery about sharkskin and, in the process, demonstrated a new, bio-inspired structure that could improve the aerodynamic performance of planes, wind turbines, drones and cars. Sharks and airplanes aren't actually all that different. Both are designed to efficiently move through fluid (water and air), using the shape of their bodies to generate lift and decrease drag. The difference is, sharks have about a 400 million-year head start on the design process.



The skin of sharks is covered by thousands and thousands of small scales, or denticles, which vary in shape and size around the body. The structure of these denticles -- which are very similar to human teeth -- but the function has been debated. They turned to the short finmako, the fastest shark in the world. The mako'sdenticles have three raised ridges, like a trident. Using micro-CT scanning, the team imaged and modeled the denticles in three dimensions. Next, they 3-D printed the shapes on the surface of a wing with a curved aerodynamic cross-section, known as an airfoil. Airfoils are a primary component of all aerial devices.

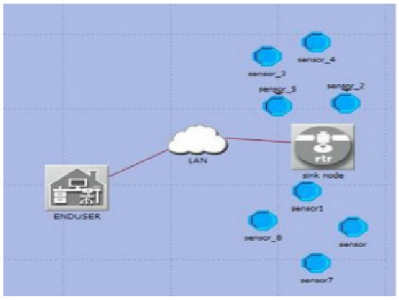
The researchers tested 20 different configurations of denticle sizes, rows and row positions on airfoils inside a water flow tank. They found that in addition to reducing drag, the denticle-shaped structures significantly increased lift, acting as high-powered, low-profile vortex generators. Cars and planes are equipped with these small, passive devices designed to alter the air flow over the surface of a moving object to make it more aerodynamic. Most vortex generators in the field today have a simple, blade-like design. These shark-inspired vortex generators achieve lift-to-drag ratio improvements of up to 323 percent compared to an airfoil without vortex generators. This research not only outlines a novel shape for vortex generators but also provides insight into the role of complex and potentially multifunctional shark denticles. This research was supported by Office of Naval Research and the National Science Foundation.

V.NIVEDHA
Second year B

Recent Trends in Agriculture by Using WSN Remote Monitoring

WirelessSensor Networks (WSNs) can be defined as a self-configure and Infrastructureless wireless networks to monitor physical or environmental conditions, such as temperature, sound, vibration, pressure, motion or pollutants and to cooperatively pass their data through the network to a main location or sink where the data can be observed and analyzed. A sink or base station acts like an interface between users and the network. One can retrieve required information from the network by injecting queries and gathering results from the sink. Typically a wireless sensor network contains hundreds of thousands of sensor nodes. The sensor nodes can communicate among themselves using radio signals. Wireless Sensor Network is most challenging area with low cost application for military as well as public. Recent trend for research in WSN can be in the area of Agricultural, where the concept of wireless communications is used here. The sensor nodes are giving an approach for a low cost monitoring of a crop in an agricultural area that leads toeffective applications and their drawbacks also discussed in this paper. Hence, providing a solution to these. The whole prototype may be implemented using the qualnet simulator.

METHODOLOGY OF IMPLEMENTATION



In this project we have worked for two strategies such as random and grid topology, where sensor are placed at different positions are dealt with collecting the data. Now we want to deploy sensor nodes at least of 6 nodes and interface the network along with software. The random topology works well with large area, where as circular topology works best for limited area. As the agriculture crops are with limited area such as vegetables and fruits that can be employed with the circular topology. These works we want apply physically and find the result in further experimentation This area mainly depends upon the agriculture. There are different crops based on the season or climate. We want to help agriculture community with remote control monitoring of the crop as well as efficient usage of the system by having sensor models installed in the field where we can monitor the requirement of the plants and hence render the service through controllers. The experiment will be carried by selecting two areas such as small crop area like fruits and vegetables and large area like wheat, jowar. These experimentation results will help this area of agriculture production and help the agriculture community.

iSense: Modular wireless sensor hardware and software. The iSense modular hardware and software platform for wireless networks is intended for both industry and research applications. In order to fit a wide variety of application demands, the iSense hardware platform is made up of a number of modules that can be combined in various ways. Like this, functionality can be easily rearranged, and new features can be added by appending new modules.

The iSense modular node operating and networking firmware provides the sound foundation for fast application development. It provides a convenient C++ API to the node

hardware, operating system functionalities and the networking protocols. The embedded device software is supplemented with iShell, and other PC tools for programming nodes, interacting with the network, displaying sensor data and much more. Thus, this is the proposed model can be extended in real time considering the with a different arrangement of the nodes by which we try to reduce the congestion, try to increase the data reliability and try to reduce the time taken by the data to travel to its destination.

TECHNICAL SETTING

Since a variety of topologies for wireless sensor network has been developed and each topology has its own scenario, it is hard to compare all of these topologies. We use OPNET to deal with the challenges of comparing different topologies. In our research, access point is placed on the middle of each cell of the farm zone for grid topology. In this model, sensor nodes which are on the left and right side of the road will sense agriculture parameters and forward those to the base station every 15 minute, which are indicated by red arrows

In this topology we divided our field to the 6 zones, and 4 sensors are located in each section. Therefore, we have 24 sensors with 16m of vertical and horizontal distance between them. We use different range of IP addresses for connecting an access point to the routers and base station. In addition, each of sensors has a specific IP for delivering the information to the sink node; hence, monitoring system with this feature is controlled and managed each sensor area with a specific function. Also, in the base station, end-to-end delay for each node is monitored. We have another topology which is random topology. It has the same setting like grid topology. In this model, sensors and access points are distributed in an unexpected situation.

- ***Neelakandan,***
Second Year

Growing Horizons of Electronic Monitoring

Monitoring of human and animal behavior, activities or other changing information for the purpose of influence, management, direction or protection has been in practice since long. This includes observation from a distance by means of electronic equipment or interception of electronically transmitted information.However, what makes the present situation unique is the sheer scale of monitoring; the extent to which the overseer is unobtrusive and capabilities of the modern technology for storage, analysis and reporting of the gathered information.Electronic monitoring provides structure, control and accountability of people. It can also provide an extra layer of supervision with the goal of enhancing public safety in the community.

Electronic tagging, on the other hand, is a form of surveillance that uses an electronic device fitted to the person or animal.In the last few decades, the scope of electronic monitoring has widened greatly in terms of devices and applications. It can now be used for employees at workplace, crime control, drug de-addiction, animals (on land, in air and in water), vegetation, environmental and climate change, social amenities (health, banking, traffic, sports, air quality, etc), adventurers and work seekers in remote and risky areas, etc. Electronic devices such as CCTV cameras, biometric registers, sensors, radio-frequency (RF) and global positioning system

(GPS) bracelets, phones and e-mails are becoming integral tools of monitoring everywhere to improve efficiency.

USES OF ELECTRONIC MONITORING:

In sports:

Present electronic monitoring systems use new and improved apparatus and method to control a television system, which includes a replay recorder, to monitor events of interest during sports contests. When the indicator detects an event of interest during the contest being monitored, such as an intrusion or the presence of an object along a line or boundary, a signal is sent to the video replay recorder (also known as an instant replay system) to continue recording for a predetermined interval and then cease.

In sports contests, several types of indicators assist officials in monitoring events of interest, particularly those along lines or boundaries-such as determining whether a tennis ball lands in or out of play during a tennis match. One type of indicator is electronic-laser indicator. Other types of line indicators include those utilising pressure-sensitive tapes as the line or boundary and those based on the detection of magnetic particles in the ball.

Medical and health use:

At present, almost all the hospital activities are electronically monitored. Continuous electronic monitoring could save hospitals billions of rupees. Elderly people in care homes can be tagged with electronic monitors used to keep track of young offenders. Electronic monitoring can also be used to prevent dementia patients from wandering away. Use of electronic monitoring devices for inhalers is growing rapidly because of their ability to provide objective and detailed adherence data to support clinical decision making.

For animals:

As mentioned earlier, GPS collars and electronic tags are being used to monitor animal behaviour in an environment, and track and study migration patterns, respectively.

Objections to monitoring:

Electronic surveillance invades employees' privacy, erodes their sense of dignity and discourages high-quality work by sole emphasis on speed and other purely quantitative measurements. Electronic monitoring puts pressure to perform. Stressful working conditions related to monitoring include heavy workload, repetitive tasks, social isolation and fear of job loss, which are exacerbated by the lack of job involvement or participation, and no organisational support. These socio-technical triggers, besides generally adverse working conditions, can have direct psychological consequences.The monitored employees reported higher workload, less workload variation and greater workload dissatisfaction than unmonitored employees. They also reported more musculoskeletal, psychological and psychosomatic health complaints.

Caution advised:

Electronic monitoring is gaining widespread application in various fields owing to its many advantages. However, it also has a few disadvantages. Surveillance is a fundamental means by which employers inexpensively and effectively exercise power. But, stress, inter-worker competition and performance evaluations ultimately have a detrimental effect on productivity and smooth operation of businesses. So management is now concerned primarily with devising more efficient and less draconian means of implementing and administering monitoring systems. Similarly, electronic monitoring in case of animals also should not harm their behaviour, freedom and health.

U. Ajithkumar,
Final year

TECHNICAL ARTICLE BY STAFF

Design of Buck-Boost Converter for Residential PV Application

Dr. S. Kanagalakshmi,
Associate Professor, EEE

Solar power generation has a greater perspective in our country. Due to atmospheric concerns, residential applications of continuous administrative strategy Solar Photovoltaic (PV) technology have been enhanced. Government has taken efforts to upgrade the power demand for the nation. But Generation of electricity is not as much the demand due to the shortage of generation. The rural areas are mainly affected without electricity. To compensate the demand Photovoltaic power has gained more attention by its quality of power which is provided to residential and industrial customers. Gujarat has a greater capacity in solar power generation in which sunlight is converted into electricity without pollutant emission and includes solar radiation and cell temperature of PV as the environmental parameters.

Power conditioners are used to enhance the solar power generation in single stage or two stage configurations exclusively for residential areas. Single stage utility has lower power level (< 5kW) and has single phase PWM inverter between PV module and grid. It gives higher efficiency and power density with low cost. The single stage configuration is generally tailored around a single phase PWM operated by full bridge inverter. No electrical isolation is provided between the PV modules and the grid. Moreover, the grid inverter is tasked either to invert the PV string dc output voltage, or to accomplish the MPPT (Maximum Power Point Tracking). Resonant type converters, which are zero current switching or zero voltage switching, has a good solution to obtain high efficiency. Particularly, the resonant converter is suitable for the dc-dc converter because the dc-dc converter requires high switching frequency in order to realize downsizing and high speed output voltage response. However, the number of parts in the circuit increases since the resonant converters requires an additional inductor or capacitor. Moreover, the voltage and current rating of the dc-dc converter are dominated by the output voltage and current rating in conventional dc-dc converters.

Power conversion in high frequency is done in two stage configuration which includes cascade connection of dc-dc step up converter and bridge inverter with dc link in the middle. DC-DC converter canbe a transformer less non-isolated type or a high frequency transformer isolated type. Non isolated single stage power conditioners are generally more efficient than their two stage counterparts. When the strings of PV modules are directly connected to the grid inverter, the numbers of power processing steps are basically halved and a greater efficiency is achieved. However, some additional problems in practice arise when such configuration is used in PV plants for residential applications. In fact, due to the small power size generally less than 3 kW, only a limited amount of PV modules can be connected in series to form a string feeding the power conditioner. As a result, the inverter input dc voltage may be insufficient for a direct dc/ac inversion, especially when the temperature of the PV modules exceeds at 40-45^{O}C. In order to expand the input voltage range, a step-up dc-dc converter is often introduced between the PV array and the inverter, for a two stage configuration. It enables the implementation of the MPPT which is independent from the delivery of the electrical power to the grid.

Further alternatives are represented by single stage configurations with an inner voltage boosting capability as the flying inductor converter or by some topologies mixing single and two stage operational modes. An example of the last type is the time-sharing dual mode single-phase quasi-sine wave PWM inverter .It is composed of cascaded connection of a boost converter and a full bridge inverter, but it features a quasi-single stage operational mode when the input dc voltage is insufficient to produce the required grid ac voltage. In some battery applications, the output voltage is regulated by the dc-dc converter as the output voltage which is close to the input voltage. In this case, the conventional dc-dc converter has to convert all power regardless of the output voltage because the conventional converter is connected in parallel to power supply and a load. A further viable solution is the series compensation approach .

A series compensation approach of buck-boost type dc-dc converter is projected in which PV string series are connected than cascaded connection. Difference between the PV string output dc voltage and inverter input voltage is provided by converter. Transfer of electric power takes place mostly between PV modules to the inverter. Power rating of the converter is less than PV generator but has greater efficiency by delivering lossless power to the inverter. When PV string output voltage increases, power processed by converter reduces and hence voltage is sufficient for dc/ac inversion. In this similar way battery can be used for charging and

discharging purpose when PV failure occurs. This type of system is particularly used in residential applications.

The block diagram of the testing system is shown in figure 1. The system consists of the following major components such as the solar panel, dc-dc converter with MPPT, battery, single phase inverter with SPWM and transformer. Constant voltage is maintained at the inverter by varying PV output voltage in accordance with the load. DC-DC converter and inverter input are connected to PV panel. Converter and source are connected in series. To maximize the power output from PV module, MPPT is connected to dc-dc converter. Here the single phase inverter is used. The gate pulse to the inverter is given by SPWM technique which decreases the harmonics at the output of the inverter. To get a pure sinusoidal waveform, passive filter is connected after the inverter. Voltage from the inverter is not sufficient to run the loads, because the output voltage from inverter is around 72 volts. Since all loads are designed to 230 volts, to step up the voltage from inverter output to 230 volts, it requires the use of transformer. Here the 51/230V step up single phase transformer is used to run loads, as voltage from inverter is not sufficient for practical conditions.

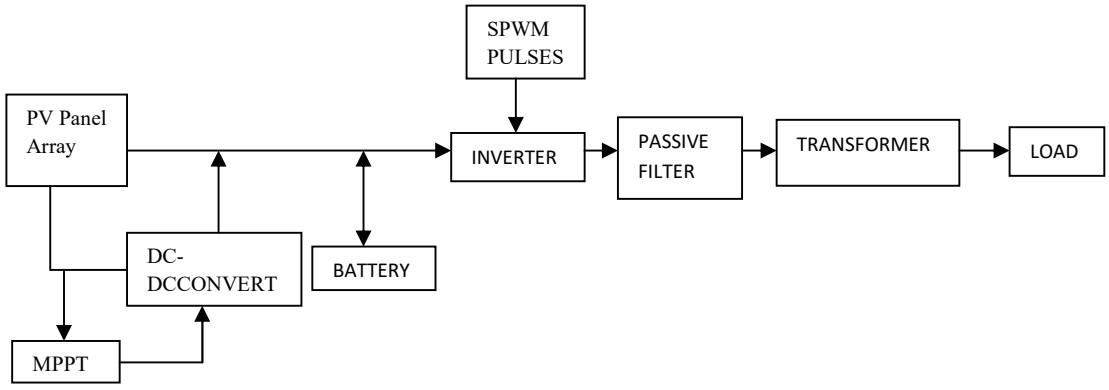


Figure 1.Block diagram of the system

DC-DC converter is used as a cascade of step-down converter and step up converter. It operates as boost converter when duty cycle is more than 0.5 and it operates as buck converter when duty cycle is less than 0.5. The boost chopper is used to generate the output ac waveform, when ac voltage exceeds the input dc voltage. Boost chopper is activated when the inverter is operated at direct dc output voltage of the PV string. During boost chopper circuit activation and deactivation there is no power or switching losses produced. The total efficiency of the power processor is similar to that of single stage configuration.

STUDENTS ACHIEVEMENTS

INTERNATIONAL CONFERENCE

Sl. No	Name of the students	Year	Event	Organizer	Date	*Rank/status*
1.	S. Meenakshi& L. Malini	II	Paper Presentation	Hindustan College of Engineering and Technology, Coimbatore	10.02.2018	***Best Paper***
2.	M. LeelaNivashini & K. Madhumitha	II	Know Yourself	Coimbatore Institute of Technology, Coimbatore	02.02.2018	***I prize***
3.	T. Mahalakshmi& P. Vigneshwari	II	Colloquim – Paper Presentation	National Institute of Technology, Tiruchirappalli	15.02.2018	***II Prize***
4.	M. Vijay Shanmugam & L.SivaBalaji	II	Paper Presentation	Thiagarajar College of Engineering	24.02.2018	***III prize***
5.	S. SindhuMuhila	III	Paper presentation	Dr.SivanthiAditanar College of Engineering	23.02.2018	***II prize***
6.	S.Rama Lakshmi	III	Paper presentation	Dr.SivanthiAditanar College of Engineering	23.02.2018	***II prize***
7.	R.Padmavathi	III	Paper presentation	Dr.SivanthiAditanar College of Engineering	23.02.2018	***II prize***
8.	S.Selvalakshmi	III	Paper presentation	Dr.SivanthiAditanar College of Engineering	23.02.2018	***II prize***
9.	M.Abdul Kader Riyaz	IV	International Conference	Saveetha Engineering College (ICPCSI 2017)	21.09.2017	*Participation*
10.	S.ArunJeyakumar	IV	International Conference	Saveetha Engineering College (ICPCSI 2017)	21.09.2017	*Participation*
11.	M.Abdul Hameed Sharik	IV	International Conference	Saveetha Engineering College (ICPCSI 2017)	21.09.2017	*Participation*
12.	ArunKumar.S	III	International Conference	Karpagam College of Engineering, Coimbatore	19.01.2018 20.01.2018	*Participation*
13.	Ramesh Moorthi.I	III	International Conference	Karpagam College of Engineering, Coimbatore	19.01.2018 20.01.2018	*Participation*
14.	M.Sathish Kumar	III	International Conference	Karpagam College of Engineering, Coimbatore	19.01.2018 20.01.2018	*Participation*
15.	S.Arun Kumar	III	International Conference	Karpagam College of Engineering, Coimbatore	19.01.2018 20.01.2018	*Participation*
16.	Viswanath.G	III	International Conference	Karpagam College of Engineering, Coimbatore	19.01.2018 20.01.2018	*Participation*
17.	T.Selvakumar [2 paper]	III	International Conference	Karpagam College of Engineering, Coimbatore	19.01.2018 20.01.2018	*Participation*
18.	Viswanath.G	III	International Conference	Prathyusha Engineering College, Chennai	27.02.2018 28.02.2018	*Participation*
19.	M.Sathish Kumar	III	International Conference	Prathyusha Engineering College, Chennai	27.02.2018 28.02.2018	*Participation*
20.	K.Kanika	III	International Conference	JCT College of Engineering and Technology	19.01.2018 20.01.2018	*Participation*
21.	Gopinath.S	III	International Conference	SSN College of Engineering	07.02.2018 08.02.2018	*Participation*

22.	Saravanan.J	III	International Conference	SSN College of Engineering	07.02.2018 08.02.2018	*Participation*
23.	Sreevidya Chidambara Vadivoo.T	III	International Conference	SSN College of Engineering	07.02.2018 08.02.2018	*Participation*
24.	Vishnu Priya.K	III	International Conference	SSN College of Engineering	07.02.2018 08.02.2018	*Participation*
25.	M.Krishnashini	IV	International Conference	SSN College of Engineering	07.02.2018 08.02.2018	*Participation*
26.	I.Anjana	IV	International Conference	SSN College of Engineering	07.02.2018 08.02.2018	*Participation*
27.	K.Koodammal	IV	International Conference	SSN College of Engineering	07.02.2018 08.02.2018	*Participation*
28.	S.Divyaprithi	IV	International Conference	SSN College of Engineering	07.02.2018 08.02.2018	*Participation*
29.	J.Jesina	IV	International Conference	SSN College of Engineering	07.02.2018 08.02.2018	*Participation*
30.	S.Maheswari	IV	International Conference	SSN College of Engineering	07.02.2018 08.02.2018	*Participation*
31.	T.Manonmani	IV	International Conference	SSN College of Engineering	07.02.2018 08.02.2018	*Participation*
32.	M.Maragathalakshmi,	IV	International Conference	SSN College of Engineering	07.02.2018 08.02.2018	*Participation*
33.	V.Nivedha	II	Paper Presentation	RAMCO Institute of technology	12.08.2017	*Participation*
34.	M.AniNithsha	III	Paper presentation	Coimbatore Institute of Technology, Coimbatore	16.09.2017	*Participation*
35.	A.Aasha	III	Paper presentation	Coimbatore Institute of Technology, Coimbatore	16.09.2017	*Participation*
36.	M.AnjuAbinaya	III	Paper presentation	Coimbatore Institute of Technology, Coimbatore	16.09.2017	*Participation*
37.	A.Nithiyasree	III	Paper presentation	Coimbatore Institute of Technology, Coimbatore	16.09.2017	*Participation*
38.	P.Kavitha	III	Paper presentation	University of VOC College of Engineering	15.09.2017	*Participation*
39.	M.Muthuvaradha Lakshmi	III	Paper presentation	University of VOC College of Engineering	15.09.2017	*Participation*
40.	S.Lakshmi Brindha	III	Paper presentation	University of VOC College of Engineering	15.09.2017	*Participation*
41.	P.Kasirani	III	Paper presentation	RanganayagiVaratharaja College of Engineering, Sivakasi	01.09.2017	*Participation*
42.	M.Gowsalya	III	Paper presentation	RanganayagiVaratharaja College of Engineering,	01.09.2017	*Participation*
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46.	R.Nandhini	III	Paper presentation	PSR Engineering College, Sivakasi	15.09.2017	*Participation*

47.	Muniraj.R	III	Paper presentation	Kamaraj college of Engineering, Virudhunagar	07.09.2017	*Participation*
48.	Muthuram.C	III	Paper presentation	Kamaraj college of Engineering, Virudhunagar	07.09.2017	*Participation*
49.	Ganesh	III	Paper presentation	Kamaraj college of Engineering, Virudhunagar	07.09.2017	*Participation*
50.	J. Sankari	III	Paper presentation	Coimbatore Institute of Technology, Coimbatore	15.09.2017	*Participation*
51.	K.Santhiya Lakshmi	III	Paper presentation	Coimbatore Institute of Technology, Coimbatore	15.09.2017	*Participation*
52.	P.Sathyagomathi	III	Paper presentation	P.S.R Engineering College, Sivakasi	15.09.2017	*Participation*
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55.	B.Uma	III	Paper presentation	P.S.R Engineering College, Sivakasi	15.09.0217	*Participation*
56.	S.Reshma Priyadharshini	III	Paper presentation	University VOC College of Engineering, Tuticourin	15.09.2017	*Participation*
57.	K.VishnuPriya	III	Paper presentation	University VOC College of Engineering, Tuticourin	15.09.2017	*Participation*
58.	B.Radha	III	Paper presentation	University VOC College of Engineering, Tuticourin	15.09.2017	*Participation*
59.	S.PriyaDharshini	III	Paper presentation	Kamaraj College of Engineering, Virudhunagar	07.09.2017	*Participation*
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66.	K.Rajkamal	III	Paper presentation	MeenakshiSundharanar College, Chennai	31.08.2017	*Participation*
67.	M.VelMurugesan	III	Paper presentation	MeenakshiSundharanar College, Chennai	31.08.2017	*Participation*
68.	M.Srinivasan	III	Paper presentation	MeenakshiSundharanar College, Chennai	31.08.2017	*Participation*

69.	K.Sethanadevi	III	Paper presentation	Velammal of Engineering, Madurai	23.09.2017	*Participation*
70.	M.Suganthi	III	Paper presentation	Velammal of Engineering, Madurai	23.09.2017	*Participation*
71.	T.Sreevidya	III	Paper presentation	Kongu College of Engineering, Erode	22.09.2017	*Participation*
72.	K.Shenbagadevi	III	Paper presentation	Kongu College of Engineering, Erode	22.09.2017	*Participation*
73.	T. Chidambara vadivoo	III	Paper presentation	Kongu College of Engineering, Erode	22.09.2017	*Participation*
74.	Vavuniya.M	II	Paper presentation	MIT, Anna University, Chennai	25.01.2018 26.01.2018	*Participation*
75.	Kowsalya.S	II	Paper presentation	MIT, Anna University, Chennai	25.01.2018 26.01.2018	*Participation*
76.	A.M.Kirthika	II	Paper presentation	Coimbatore Institute of Technology, Coimbatore	02.02.2018 03.02.2018	*Participation*
77.	MadhuMitha.K	II	Paper presentation	Coimbatore Institute of Technology, Coimbatore	02.02.2018 03.02.2018	*Participation*
78.	EswariPrabha.P	II	Paper presentation	Coimbatore Institute of Technology, Coimbatore	02.02.2018 03.02.2018	*Participation*
79.	LeelaNivashini.M	II	Paper presentation	Coimbatore Institute of Technology, Coimbatore	02.02.2018 03.02.2018	*Participation*
80.	M.DivyaBharathi	III	Vision 2020	NEC, YRC Club	18.08.2017	*Participation*
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82.	Gowsalya	III	Vision 2020	NEC, YRC Club	18.08.2017	*Participation*
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85.	Prakash.P.R	IV	Paper presentation	IE(I), NEC, Kovilpatti	06.09.2017	*Participation*
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87.	Sam Christopherponraj.F	IV	Paper presentation	IE(I), NEC, Kovilpatti	06.09.2017	*Participation*
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89.	Padmavathi.V	III	Paper presentation	IE(I), NEC, Kovilpatti	06.09.2017	*Participation*
90.	Radha.B	III	Paper presentation	IE(I), NEC, Kovilpatti	06.09.2017	*Participation*
91.	Sankari.J	III	Paper presentation	IE(I), NEC, Kovilpatti	06.09.2017	*Participation*
92.	Santhiya Lakshmi.K	III	Paper presentation	IE(I), NEC, Kovilpatti	06.09.2017	*Participation*
93.	Saravanakumar.S	III	Paper presentation	IE(I), NEC, Kovilpatti	06.09.2017	*Participation*
94.	Sugasini.M	III	Paper	IE(I), NEC, Kovilpatti	06.09.2017	*Participation*

			presentation			
95.	Aasha.A	III	Project Contest	Velammal College of Engineering & Technology	09.02.2018	*Participation*
96.	M.AniNithsha	III	Project Contest	Velammal College of Engineering & Technology	09.02.2018	*Participation*
97.	Padmavathi.R	III	Paper presentation	Velammal College of Engineering & Technology	23.09.2017	*Participation*
98.	SelvaLakshmi.S	III	Paper presentation	Velammal College of Engineering & Technology	23.09.2017	*Participation*
99.	SethanaDevi.K	III	Paper presentation	Velammal College of Engineering & Technology	23.09.2017	*Participation*
100.	SamivelSubash.S	II	Paper presentation	Dr.SivanthiAditanar College of Engineering	01.09.2017	*Participation*
101.	SangeethaShorubha.R	II	Paper presentation	Ramco Institute of Technology, Rajapalayam	12.08.2017	*Participation*
102.	Saranya.S	II	Paper presentation	Bannari Amman Institute of Technology, Erode	24.01.2018	*Participation*
103.	K.Subbiah Kumar	II	Paper presentation	Bannari Amman Institute of Technology, Erode	16.02.2018 17.02.2018	*Participation*
104.	M.Subaragavan	II	Paper presentation	Bannari Amman Institute of Technology, Erode	16.02.2018 17.02.2018	*Participation*
105.	K.Subbiah Kumar	II	Connexions	Bannari Amman Institute of Technology, Erode	16.02.2018 17.02.2018	*Participation*
106.	M.Subaragavan	II	Connexions	Bannari Amman Institute of Technology, Erode	16.02.2018 17.02.2018	*Participation*
107.	Subaragavan.M	II	Paper presentation	Dr.SivanthiAditanar College of Engineering	12.08.2017	*Participation*
108.	M.Balakrishnan	III	Circuit Debugging	NEC, ISOI club	21.09.2017	*Participation*
109.	C.K.Muthuram	III	Circuit Debugging	NEC, ISOI club	21.09.2017	*Participation*
110.	M.Karan	III	Circuit Debugging	NEC, ISOI club	21.09.2017	*Participation*
111.	N.Navitha	III	Circuit Debugging	NEC, ISOI club	21.09.2017	*Participation*
112.	A.Aasha	III	Circuit Debugging	NEC, ISOI club	21.09.2017	*Participation*
113.	R.Nandhini	III	Circuit Debugging	NEC, ISOI club	21.09.2017	*Participation*
114.	A.Priyadarshini	II	Debate	NEC [ICT, MHRD]	13.07.2017	*Participation*
115.	A.Meenakshi	II	Debate	NEC [ICT, MHRD]	13.07.2017	*Participation*
116.	K.Vishnupriya	III	Debate (GST)	EEE, Seminar Hall	12.08.2017	*Participation*
117.	A.PoornaPushkala	II	Essay Writing	NEC [ICT, MHRD]	13.07.2017	*Participation*

118.	A.G.Naveen Kumar	II	Essay Writing	NEC [ICT, MHRD]	13.07.2017	*Participation*
119.	DeepikaRajam	III	ESSAY WRITING	NEC, YRC Club	18.08.2017	*Participation*
120.	M.JothiBasu	III	General quiz	Holy cross Engineering college, Tuticorin	31.08.2017	*Participation*
121.	R.Aravindhan	III	General quiz	Holy cross Engineering college, Tuticorin	31.08.2017	*Participation*
122.	S.Ariharan	III	General quiz	Holy cross Engineering college, Tuticorin	31.08.2017	*Participation*
123.	N.PrasannaVenkatesan	III	General Quiz	Holy cross Engineering College, Tuticorin	31.08.2017	*Participation*
124.	A.Meenakshi	II	Paper presentation	Vellore Institute of Technology, Vellore	25.02.2018	*Participation*
125.	A.Priyadarshini	II	Paper presentation	Vellore Institute of Technology, Vellore	25.02.2018	*Participation*
126.	Gobika.R.K	II	Paper presentation	Vellore Institute of Technology, Vellore	25.02.2018	*Participation*
127.	T.Mahalakshmi	II	Paper presentation	Vellore Institute of Technology, Vellore	25.02.2018	*Participation*
128.	Vijayakumari.M	II	Paper presentation	Vellore Institute of Technology, Vellore	25.02.2018	*Participation*
129.	Aarthy.B	II	Paper presentation	Vellore Institute of Technology, Vellore	25.02.2018	*Participation*
130.	Sri AlameluMangai.N	II	Paper presentation	Vellore Institute of Technology, Vellore	25.02.2018	*Participation*
131.	S.Shantha Kumar	II	Paper presentation	Sri Ramakrishna Engineering College	22.02.2018	*Participation*
132.	S.J.Shanmugavel	II	Paper presentation	Sri Ramakrishna Engineering College	22.02.2018	*Participation*
133.	Neelakandan.T	II	Paper presentation	Sri Ramakrishna Engineering College	22.02.2018	*Participation*
134.	SamivelSubash.S	II	Paper presentation	Sri Ramakrishna Engineering College	22.02.2018	*Participation*
135.	G.SivaBalaji	II	Paper presentation	Sri Ramakrishna Engineering College	22.02.2018	*Participation*
136.	P.Subash Raja	II	Paper presentation	Hindustan College of Engineering, Chennai	24.02.2018	*Participation*
137.	P.Sudalaimani	II	Paper presentation	Hindustan College of Engineering, Chennai	24.02.2018	*Participation*

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