



NATIONAL ENGINEERING COLLEGE

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

K.R.Nagar, Kovilpatti - 628 503.



JULY 2016

VOLUME NO 4

ISSUE 1

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

Dear Friends....!

"Work Hard In Silence Let Success Make All The Noise"

Your Silent Hard Work is getting tuned and amplified by our Newsletter. We are happy to introduce the first issue of Volume 4 Issue 1 of EEE Newsletter. Your Work is to expose your Skills; Our Work is to visualize your Skills. Here we have visualize our Department Activities, Staff Activities and our Student Achievement. We have an article about alumni interaction from where we earn the support and guidance from seniors.

"Sharing Knowledge"-We can share our knowledge by the article. We hope it would help you be updated on the recent trends. This is the time to take a stronghold and ambitiously foot up to the next step in the ladder of life.

Energize yourself, Keep rocking. "Keep Reading this informative periodically and Keep Supporting" .Thanks for the contributors and special thanks for the staff members who support us.

Any work won't be successful until it has a queries and feedback. Anticipating your valuable feedbacks and queries.

Happy Reading...!!!!

- *Ms.R.Bavithra*

Final Year EEE

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Dear Fellow Pupils,

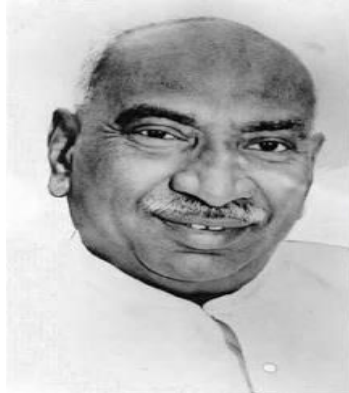
*J*ULY MONTH...

Dear Pupil,

This month we can pronounce it an honorable month for the citizens of India since it brought us a great Indian Citizen as our Leader....

KAMARAJAR (Rise- 15/07/1903), who was not only a great Chief Minister but also a legendary Citizen... Everyone one of us are exposed to his contributions to education and his political face. Now It's time to become familiar about his life as a common person.

It is said that he is a person who put his country's development before his fame.



உதவியாளர்:

2லட்ச ரூபாய் இருந்தால் நீங்கள்
செய்த சாதனைகளை படமாக்கி
வரும் தேர்தலில் வெற்றி பெற்று
விடலாம்

காமராஜர்:

அடேங்கப்பா, அதுல நான் நாலு
பள்ளி கூடம் கட்டிடுவேனே

It is also true that he had a gist of thoughts for his own welfare. So as professionals, the citizens of India, should try our best to serve or think about country atleast a small percent as his... Make it happen Citizens!!!

Thank You,

Raechel Annisha Angel. L (Third Year B)

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

S.No.	Name of the Staff	Events/Guest Lecture	Topic/Event	Date	College
1.	Dr.R.V.Maheswari, Asso. Prof.	Guest Lecture	High Voltage Testing and Insulation Co-ordination	21.06.2016	Kamaraj College of Engineering and Technology, Virudhunagar
2.	Dr.R.V.Maheswari, Asso. Prof. & Mr.B.Vigneshwaran, AP	Anna University Sponsored 7 Days FDTP	EE 6006 - Applied Soft Computing	09.06.2016 – 15.06.2016	Anna University – MIT Campus
3.	Mr.S.Senthil Kumar, AP	Anna University Sponsored 7 Days FDTP	EE6701 - High Voltage Engineering	01.05.2016 – 08.05.2016	St. Joseph's Institute of Technology, Chennai
4.	Mrs.S.Divya, AP	Anna University Sponsored 7 Days FDTP	Electromagnetic Theory	06.06.2016-12.06.2016	Velammal Engineering College, Madurai



Dr.R.V.Maheswari, Asso. Prof/EEE delivered a Guest Lecture on FDTP at Kamaraj College of Engineering and Technology

ACHIEVEMENTS:

- ✓ **Mr.N.B.Prakash, Associate Professor/EEE** has certified as “**Master Trainer**” in the course “**Foundation Skills in Integrated Product Development (FSIPD)**” organized by Centre for Faculty Development, Anna University, Chennai in collaboration with IT-ITeSSector skills Council NASSCOM during July 2015 to March 2016.

DEPARTMENT ACTIVITIES

EEE ASSOCIATION - ACTIVITIES

INAUGURAL FUNCTION



Department of Electrical and Electronics Engineering of National Engineering College, Kovilpatti, organized an inaugural function of Electrical and Electronics Engineering Association (EEE Association) for the year 2016 - 2017 on **15th July 2016**. **Mrs. Kanagavalli (Alumni 2003)**, Data Architect, TATA Consultancy Services, Bangalore, was the Chief Guest and inaugurated the function.

The Chief Guest in her address motivated the students and insisted them to keep update in the recent technology, be confident in taking decisions and fix a vision in their life are the three secrets that every engineer should follow for their successful future. She also pointed out the expectations of IT sector during interviews.

BASICS OF MATLAB



A workshop on “**BASICS OF MATLAB**” was conducted on 09.07.2016 and 23.06.2016 by **Mr.T.Siva kumar and Mr.B.Vigneshwaran, Assistant Professor/EEE** at Research Simulation Lab was organized by EEE Association. The objectives of the session are:

- Basics about MATLAB Software
- How to do mathematical & logical operation using MATLAB coding
- How to rectify the errors while executing the MATLAB coding

SPECIAL INTEREST GROUP

HIGH VOLTAGE ENGINEERING

A brief introduction about “High Voltage Engineering” was given by **Dr.R.V.Maheswari, Associate Professor/EEE**. Then ,she explained about,

- ✚ The electrical insulation levels of different components in the electrical power system including transmission network, substations etc.,
- ✚ Insulation coordination for power systems with real time examples
- ✚ Purpose of High voltage testing and test methodologies used in high voltage testing
- ✚ Standards used for testing
- ✚ Ongoing research works in high voltage engineering



The session was continued by **Mr.K.Kumar Assistant professor/EEE**. He enlightens the importance of high voltage engineering and its applications in industries. Then he explained,

- ✚ The breakdown mechanisms of liquid, solid and gaseous dielectrics.
- ✚ Testing techniques involved in solid dielectrics
- ✚ The current research in high voltage engineering area focuses on topics such as diagnostic testing and condition monitoring of power equipment, pollution and flashover studies.

POWER SYSTEM AND ENERGY

The introduction class of ‘Power system and Energy’ was held on 02/07/2015 at H1 hall of EEE department.

The first session was handled by **Mr.T.Sivakumar, AP/EEE**. He discussed about the role of special interest group in improving the technical skills of student. He motivated the students to attend paper presentation, international conferences and to do mini projects in power and energy. He also gave information about the recent developments in power system.



Then the next session was continued with an introduction to “**Power Quality issues and its mitigation techniques**” handled by **Mr.A.Pandiyarajan, AP/EEE**. The following topics were discussed,

1. Structure of Power system
2. Power Generation by selecting the appropriate Generators for different power plants
3. Various power quality problems in power distribution system
4. Solutions to power quality problems by custom power devices.

EMBEDDED SYSTEMS

An introduction to “Embedded Systems” was given by **Mr.N.B.Prakash, Associate Professor/EEE**. Then the session was continued with an introduction to “FPGA” handled by **Ms.A.Tamilarasi, Assistant Professor /EEE** and finally the session was closed with **Mr.Antony Jeffery Vaz, Assistant Professor/EEE** by giving an introduction to “Arduino” at Class Room H3 for Special Interest Group (SIG) members.

Mr.N.B.Prakash, Associate Professor/EEE gave information regarding the Embedded System SIG and he made an interactive session with students about the applications of embedded system.



Then **Ms.A.Tamilarasi, Assistant Professor /EEE** gave an introduction to Microprocessor, Microcontroller and its features. Then she briefly explained about Field Programmable Gate Array (FPGA) and its real time applications.

Finally, **Mr.Antony Jeffery Vaz** discuss about embedded systems with the students. Then he creates awareness about “Arduino” controller among the students.

GATE FORUM



On behalf of **EEE GATE Forum**, special GATE class has been conducted on 02.07.2016 at 10.30 am for the final year students. They discussed about Engineering Mathematics especially Matrix Algebra and solved many problems, finally they conducted one test for the students.

MOCK INTERVIEW



EEE Association & Department Placement forum combined and organizes a Mock Interview for IV Year Students. The ultimate aim of the interview is too bring out the students from fear while facing interviews. The interviews were scheduled as two sessions on 18.07.2016 & 21.07.2016. Totally 6 batches with 2 staff members are in the group. After Completion the students came to an idea of Do's and Don'ts in interview.

ALUMNI INTERACTION



Department of EEE organized an Alumni Interaction for our students on 15.07.2016 on 2.30 PM at EEE Seminar Hall. During that session, she gave the outline about Data Architecture. Students came out with many questions regarding their doubts about placement. She clarified their doubts with clear idea. She shared her experience with TCS. She guided the students to concentrate on their projects and gave tips to crack the apps round. She insisted the students to be confident and bold enough to answer the interviewer. She inspired the students by her speech. Finally the session was very useful and Students got an ideas and tips to face interview and also got ideas how to get prepared for interview.

SOCIAL AWARENESS CELL



Department of EEE, National Engineering College has implemented *social service and awareness cell* with the aim of creating awareness in the community on electrical safety. “The impact of carelessness shocks us the most” related to the proverb a awareness camp has been arranged for higher secondary school students of Oothupatti on 21.07.2016. the main objective of the camp is to,

- Give awareness on electrical hazards
- Describe the safety requirements and practices

The session was started by **Mr.N.B.Prakash, Asso, Prof/EEE** with the proverb saying, “*you cannot change your future but you can change your habit*”. Then he gave a brief description about the proper ways of using electricity. Followed by him lateral entry students of final year gave speech on the topic “Electricity utilization and conservation”, along with that they made a drama to know about safety issues and practical actions to handle electricity. Finally they have concluded the session with video demonstration on how electricity is produced from natural resources and solar electricity for homes and irrigation. **Mr.K.Kumar, AP/EEE** along with **Mr.K.Subburaj, technician** coordinate the session.

NPTEL ONLINE EXAM – TOPPERS LIST

The following students secured top rank in NPTEL Online exams during the academic year 2015 – 16.



SUNANTHAA.S.P



SURIYA.S



ABBIRAMY DEVIBALA.E



PRAKASH.P.R



JENNIFER.M



AMALA AANI.A



ISWARAMOORTHY.U



JERLIN.B



RAMYA.S



ISWARIYA.M



MOHAMEDSARJUN.S



SUBASH.S



UMADEVI.K



TAMILARASI.P



SATHYA BAMA.K

UNIVERSITY OF TEXAS - ONLINE EXAMS

The following students completed their Online exams from university of Texas during the academic year 2015 – 16.



Mr. Ajithkumar.U



Mr. Dinakar Raja.R



Mr. Franklin.D



Mr. Jagadeeshwaran.M



Mr. Iswaramoorthy.M

MINI PROJECT FORUM

ENTREPRENEUR CELL



MINI PROJECT Forum is functioning in EEE department for motivating students to do mini projects from III semester onwards. 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** at Seminar hall on **16-07-2016**. 44 students of second year EEE were participated in the hands on session. In this session, preparation of Printed Circuit Board (PCB) for some simple circuits such as power supply unit, IR based switch, mini inverter has been discussed.

The session was handled by **Mr.N.B.Prakash Coordinator/EDC/EEE** on 13.07.2016 covering the topic of Positive Attitude, Self motivation, Confidence Level. The students were motivated by motivational stories relevant to the product and marketing development. Recent trends and areas where solutions can be provided to the industrial problems. Also the information regarding the projects and innovation entrepreneur development concept has been passing on to the students. Session starts by 04.30PM and ends by 05.20PM. More than 50 students participated.

TIME TO KNOW OUR ALUMNI



- *Mr.Rajagopal. S,*
KAAR Technologies, Saudi Arabia,
Batch: 2007

SERVICE DELIVERY HEAD – KAAR TECHNOLOGIES

Kaar Technologies is a global consulting firm focused at designing, delivering and deploying the finest ideas and SAP expertise

to empower companies in achieving new heights of excellence in today's challenging business landscape

ACADEMIC QUALIFICATION

- ✓ Completed Schooling from Lakshmi Mills Higher Secondary School, Kovilpatti in 2003.
- ✓ Bachelor of Engineering in Electrical and Electronics Engineering, from National Engineering College, Anna University in 2007 with First Class.
- ✓ Certified in SAP Technology by SAP Global Company, Walldorf.

PROFESSIONAL PROFILE

- ✓ Received offers from 2 Companies (Aspire systems and Hexaware Technologies)in 2007 when I am doing final year through off-campus recruitments
- ✓ Started my career with Hexaware and currently working as Service Delivery Head for Kaarcloud services in KAAR Technologies for past 7 + years.
- ✓ Travelled across countries, managing several clients in Europe, Saudi Arabia, Bahrain, Abu Dhabi and Dubai.

ACHIEVEMENTS

- ✓ Scout Cadet in 1996, NCC cadet in 1999, NSS volunteer in 2001
- ✓ District Table Tennis player in 2001 and 2002
- ✓ Secretary of Junior JC Club in 2006, Executive member in IEEE Association, Executive member of Placement cell
- ✓ Received Star Performer Award twice in Kaar Technologies and Received Award for one of his Ideal Project in Kingdom of Saudi Arabia

Students Achievements/Activities
Students Achievements
Second Year – BEC Course
Preliminary Level

S.NO.	NAME OF THE STUDENTS
1	Mahalakshmi.B
2	Sethana Devi.K
3	Yogesh .K
4	Suryakumar.C.V
5	R.Ananda Muthumani
6	Thanga Adhi Lakshmi.S
7	Abishek.S

Vantage Level

S.NO.	NAME OF THE STUDENTS
1	Ariharan. S
2	Aasha.A
3	Padmavathi.R
4	Divya. D.R
5	Sankari. J
6	Santhiyalakshmi. K
7	Aravindhan.R
8	Gopalakrishnan.S
9	Kanika.K
10	Kartheeswaran.M
11	Sourabi Krishna.T
12	Prasanna Venkatesan.N
13	Maha Swetha.P

14	Nandhini.M
15	Lakshmi Brindha.S
16	Vishnu Priya.K
17	Ani Nithusha.M

Third Year A – Inplant Training

S.NO	NAME	VENUE	DATE
1.	R.Narain Krishna S.Prabhu P.R.Prakash R.K.Rajkumar A.Seenivasakan D.Venkatesh S.Robhinponrasu S.Suriya N.Shameemafarhana P.Ponsharmila S.SathiyaBamaa	TTPS Tuticorin	30-5-2016 - 03-06-2016

Third Year B – Inplant Training

S.NO	NAME	VENUE	DATE
2.	P.Tamilarasi S.P.Sunantha R.Vinsly S.Ramya J.Senthiladevi P.RamachandraBharathi G.Ponmala M.Nalini P.Rajasree L.RaechelAnnisha Angel	TTPS Tuticorin	30-5-2016 - 03-6-2016

3.	A.Sangeetha A.U.Najeeba	SPIC	6-6-2016 - 10-6-2016
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Final Year A- Inplant Training

S.NO	NAME	VENUE	DATE
1.	K.Madasamy@yuvaraja	Integral coach Factory, Perambur, Chennai	25.05.2016 - 1.06.2016
2.	S.Abdul Rahuman M. Kannan M. Arumugam L.R.Kausika Lakshmanan	33/110KV VM Chatram Substation Ktc Nagar Tirunelveli.	06.06.2016 - 10.06.2016
3.	M.Arun Kumar S. Ganapathy Vinayagam S. Durai Pandian M. Bala Subramaniam R. Balaji Karikalan K. Ganesha Moorthi	33/110KV VM Chatram Substation Ktc Nagar Tirunelveli.	30.05.2016 - 03.06.2016
4.	M. Alaguselvakumar V.Mullaivaneshwaran	Rail School Madurai.	29.05.2016 - 04.06.2016
5.	J. Aksha	ISRO Bangalore.	13.06.2016 - 17.06.2016
6.	C. Jayashree	S.R.Industries Chennai.	30.05.2016 - 10.06.2016

Final Year B- Inplant Training

S.NO	NAME	VENUE	DATE
1.	B.Shanmuga Nithya K.Soundarya M.Veni Priya S. Sripriya A. Primika S. Vigneshwari M.Sudha S. SheebaNancyThangam	230/110KV, 110/11KV Substation TAN TRANSCO Madurai.	29.05.2016 - 03.06.2016

Final Year A - Internship

S.NO	NAME	VENUE	DATE
1	J. Caroline Joy	Lucas.Tvs ltd Chennai.	31.05.2016 - 09.06.2016

Final Year B - Internship

S.NO	NAME	VENUE	DATE
1.	G.Saravana Kumar A.Rama subramanium M.Vigneshwaran A.Prem Kumar N. Naveen Kumar S. Subash	Axix Global Automation, Trichy.	23.05.2016 - 27.05.2016
2.	R.M.Vishnu V. Ramesh M. Raja Durai G. Selva kumar V. Vishnu Kumar	Axis Global Automation, Trichy.	01.06.2016 - 05.06.2016

TECHNICAL ARTICLE BY STAFF MEMBER

Design and Closed Loop Control of 40 kVA, 400 Hz Inverter

Ms.P.Mohana Latha

Assistant Professor

Department of Electrical and Electronics Engineering

Abstract

A 40 kVA, 400 Hz 3- Φ Inverter is designed and the output voltage of Inverter is controlled by using PI controller. The 40 kVA, 400 Hz Inverter is used in Power Conditioning Unit (PCU). The filter is designed to mitigate the harmonics in the output voltage of Voltage Source Inverter. The work deals with the design of LC filter and controller to maintain the constant output voltage of an Inverter. The THD (Total Harmonic Distortion) of the output voltage must be within the limit as per IEEE Std 1547 Requirements of Maximum Harmonic Voltage Distortion. The complete simulation work is done in MATLAB/Simulink software tool. Sinusoidal Pulse Width Modulation (SPWM) and Space Vector Pulse Width Modulation (SVPWM) are used for generating pulses for Power Semiconductor switches in Inverter. The Sinusoidal Pulse Width Modulation (SPWM) and Space Vector Pulse Width Modulation (SVPWM) are compared in terms of Total Harmonic Distortion (THD), Harmonic Density, and DC utilization.

Introduction

Recently, developments in power electronics and semiconductor devices have lead to improvements in power electronic systems. Within the last decade, there have been a major upgrading in power electronics. In recent years, the field power electronics experienced a large growth due to the confluence of several factors. Moreover, the advances in semiconductor fabrication technology have made it possible to significantly improve the current and voltage handling capabilities and switching speeds of power semiconductor devices which make up the power processor unit. At the same time, the market for power electronics has also significantly expanded.

The Inverters are widely used in many power applications and industrial applications.

The input may be a battery, fuel cell, solar cell or other dc sources. DC to AC converters are known as Inverters. The function of an Inverter is to convert a dc input voltage to a symmetric ac output voltage of desired magnitude and frequency. The output voltage would be fixed or variable at a fixed or variable frequency. A variable output voltage can be obtained by varying either the input dc voltage or gain of the inverter

The output voltage waveforms of ideal inverter must be sinusoidal. However the waveforms of practical inverters are non-sinusoidal and contain certain harmonics. For low and medium power applications, square-wave or quasi-square-wave voltages are acceptable, but for high power applications very low distorted sinusoidal waveforms are required. With the availability of high speed power semiconductor devices, the harmonic contents of output voltage can be minimized or reduced by switching techniques.

In this work, a 40 kVA, 400 Hz, 3- Φ Voltage Source Inverter (VSI) is designed and the output voltage of 3- Φ VSI is controlled. This 40 kVA, 400 Hz Inverter is used in Power Conditioning Unit (PCU). Power Conditioning Unit (PCU) is so designed to maintain the constant voltage and frequency which is used along with that of Permanent Magnet Alternator.

The output voltage of inverter is non-sinusoidal and it contains the certain harmonics which has to be mitigated. Filters are generally introduced in the ac side of the inverter. VSI are divided up into three categories Pulse-width Modulated (PWM) Inverters, Square-wave Inverters, and Single-phase Inverters with Voltage Cancellation. This thesis deals with the 3- Φ PWM inverter. There are various PWM techniques used to control the output voltage. Sinusoidal Pulse Width Modulation (SPWM) and Space Vector Pulse Width Modulation are used to control the output voltage of 3- Φ Inverter. Both PWM techniques are used in the Closed Loop Control of Inverter and the comparative analysis is done based on the Harmonic Density, Total Harmonic Distortion (THD) and DC utilization. The main objective of this work is to attenuate the voltage harmonics in the output side and to control the load voltage. The complete work is done using MATLAB/Simulink.

STUDENT ARTICLES

BACTERIA THAT DEGRADES POLYMERS

A team of Japanese researchers under Shoshone yosida at Kyoto university have identified a bacterial species which consumes (i.e degrades) PET (POLYETHYLENE TEREPHTHALATE).Being one of the most widely used thermoplastic polymer especially in the manufacturing of liquid containers and textile fibres, its non biodegradable nature is a global concern. polymers have become indispensable for humans in this twenty –first century.

Recycling of polymers are not feasible for under developed and developing countries. so the preferred solution is to find a way for bio degradation of polymers .the discovery of this bacterium which they have named as “ idionella sakiensis 201-F6” is a huge milestone in the novel concept of “polymer bio-degradation”.

The scientists collected 250 PET debris samples from a PET bottle recycling site. Further analysis showed that a colony of the above mentioned bacterium depends on a thin PET film which acts as carbon source for them .the bacterial colony degrades a thin film of PET in 6 weeks at a temperature of 30 C.

The enzymes responsible for this degradation are PETase and MHETase breaks down PET into a compound called MHET (mono 2 hydroxy ethyl terephthalic acid). MHETase breaks down MHET into ethylene glycol and terephthalic acid which are the monomers of PET.

Biotechnologists now aim to improve the efficiency of PETase and MHETase enzymes so that they can be applied on a large scale industrial degradation of PET in the near future .

[Source: the findings were published in the march 11,2016 issue of science magazine.]

Mr. R.Aravindhan, Second year EEE

FORTHCOMING DEPARTMENT ACTIVITIES:

WORKSHOP:

IEEE CIS MADRAS CHAPTER TECHNICALLY Sponsored A Three Day Workshop on “Implementation of Soft Computing Techniques Using MATLAB” ISCT ‘16 4th – 6th August, 2016

OBJECTIVE OF THE PROGRAM

- ✓ *Introduction to MATLAB Programming*
- ✓ *Introduction implementation of soft computing techniques using MATLAB toolboxes like Fuzzy Logic, Neural Network*
- ✓ *Implementation of Particle Swam Optimization*
- ✓ *Genetic Algorithm and ANFIS.*
- ✓ *Case Studies: PID Controller Tuning for SISO with MATLAB coding.*
- ✓ *MIMO systems, Economic Dispatch Problem, Speed Control of Drives, Pattern Recognition on Partial Discharges, etc*

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<i>Design Team</i>	: Hariharan.M (Prefinal EEE)

