



NATIONAL ENGINEERING COLLEGE

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

K.R.Nagar, Kovilpatti - 628 503.



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DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

Dear Friends,

I thought that words, books and pens were more powerful than guns

-Malala Yousafzai

I am happy to present the Second issue of Volume 6 Issue 2 August 2018 of EEE Newsletter and I am greatly happy to meet you all through this newsletter.

Our Departments has been actively working in the august month through EEE Association and Special Interest Group. Our alumni are frequently visiting to give guest lectures from their experience. The thirst of knowledge for our faculties has also been fulfilled. The students are proudly roaring with their achievements and still many more articles can be seen in this issue

This newsletter provides evident for our work and it is accomplished when you give your valuable time through feedback....

Looking forward to see you all in the next issue.....

Good Wishes.

By

Ms. H. Selva Devi

Second EEE

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

S.No.	Name of the Staff	Events/Guest Lecture	Topic/Event	Date	College/ Industry
1.	Ms.E.Anitha, AP/EEE	QIP of AICTE, New Delhi	Analog Integrated circuits: Fabrication Process and Applications	13 th -17 th August 2018	IISC Bengaluru
2.	Ms.K.Gowthami, AP/EEE	Faculty Development Programme	Xilinx SoC: FPGA based Design	30 th July – 03 th August 2018	National Institute of Technology, Tiruchirappali
3.	Dr.M.Ravindran, Asso. Prof(SG) & Dr.S.Senthil Kumar, AP/EEE	Short term course	Energy Management and Audit	20 th – 24 th August 2018	National Institute of Technology, Tiruchirappali
4.	Mr.B.Venkatsamy, AP/EEE	Faculty Development Programme	Entrepreneurship Development	27 th – 29 th August 2018	Anna University Regional Campus, Tirunelveli
5.	Dr.S.Senthil Kumar, AP/EEE	NPTEL Course: Effective Engineering Teaching in Practice			

PUBLICATIONS:

1. *R. Madavan, S. SenthilKumar, M. Willjuice Iruthayarajan*, “A comparative investigation on effects of nanoparticles on characteristics of natural esters-based nano-fluids”, Colloids and Surfaces A: Physicochemical and Engineering Aspects, Volume 556, 5 November 2018, Pages 30-36, **Impact Factor:** 2.84.
2. *A. Karthick, K. Kalidasa Murugavel, & L. Kalaivani*, “Performance analysis of semitransparent photovoltaic module for skylights”, Energy, 162, 798 – 812, DOI: 10.1016/j.energy.2018.08.043, 2018. **Impact Factor:** 4.968.
3. *K. Agnes Prema Mary, P.Subburaj, R.V. Maheswari, L.Kalaivani*, “Fractal features based roller bearing fault analysis using multi support vector machine”, Journal of Electrical Engineering, (Accepted for Publications)

4. *Joel Joshua.P, Prabhu.A, Arun Kumar.R, Senthil Kumar.S*, “Investigation of Various Natural Esters Insulating Medium for the Applications in High Voltage Machinery”, International Journal of Advanced Research in Basic Engineering Sciences and Technology (IJARBEST), ISSN (ONLINE):2456-5717, Vol.4, Issue.5, 2018.
5. *S.Senthil kumar, A.Prabhu*, "Wastage Pay Smart Bin", International conference on Advanced machine learning and soft computing (ICMLSC) at Dept of computer science and engineering, Vardhaman college of Engineering, Hyderabad, during 22-23, June 2018.
6. *D.Karthik Prabhu, Dr. R.V.Maheswari*, “Recognition of Partial Discharge Patterns Using Pearson’s Correlation Features Based Back Propagation Neural Network”, International Conference, ICSTEM’18, -Kalaingar karunanidhi Institute of Technology, Coimbatore
7. *B.Mohanraj, G.Muthukumar, A.Rajasekar, S.Thanga bala murugan, Dr.R.V.Maheswari*, “Analysis of transformer using Expert Systems”, International Conference on Engineering and Advancement in technology, PSES – 2018, Sri Krishna College of Technology, 22nd and 23th March 2018.
8. *G.Shunmuga lakshmi, Dr. R.V.Maheswari*, “Denoising of Partial Discharge Signal using Mathematical Morphology Filters”, International Conference on Engineering and Advancement in technology, PSES – 2018, Sri Krishna College of Technology, 22nd and 23th March 2018.

R & D ACTIVITIES:

1. **Dr.M.P.E.Rajamani**, AP(SG)/EEE was completed his **Doctorate** in “*Some studies on Enhancement of efficiency and dynamic performance of DC-DC converters*”, on 31.08.2018 under the supervisor of **Dr.P.Subburaj, Prof/EEE**.
2. **Dr.G.Kannayeram**, AP(SG)/EEE was completed his **Doctorate** in “*Multiobjective Optimal Robust Damping Controller for Unified power flow Controller using Evolutionary Algorithms*”, on 03.09.2018 under the supervisor of **Dr.P.S. Manoharan, Asso. Prof/EEE, TCE, Madurai**.

DEPARTMENT ACTIVITIES

SPECIAL INTEREST GROUP

POWER ELECTRONICS & DRIVES

A seminar on “Recent trends in Power electronic converters and inverters” was conducted on 18/08/2018 by Dr.L.Kalaivani, Professor/EEE and Mr.M.Gengaraj, Assistant Professor /EEE at Hall No.6 for Special Interested Group (SIG) members. The objectives of the session are:

- Recent trends in Power electronic converters and inverters.
- Multi carrier PWM techniques for the inverter.
- Simulation of Multi level inverter in MATLAB/Simulink Platform.

Initially Dr.L.Kalaivani discussed the various applications of power electronic converters/ inverters in the field of drives, renewable energy systems and power system. Then she described the performance comparison of conventional drives with the recent special electrical drives.

Then Mr.Gengaraj gave a brief description about the function of power electronics in industrial applications. Then he demonstrated the multilevel inverter design using MATLAB simulation and elaborated how to calculate the gate pulse parameters for the Multi carrier PWM design. And then the SIG members had hands on training to design MLI.

POWER & ENERGY

Technical Sessions were handled by Mr. G.Kannayeram Assistant Professor (S.G) /EEE. Basic introduction about conventional electricity Grid and its importance were discussed on 18/08/2018. Need for Smart grid is also explained in the Session I.

The topics in the session covers

Session-I (10.15 AM – 11.15PM)

- ❖ Present Power Scenario, Distribution automation and Energy management system applications
- ❖ The Advantages of Smart grid Distribution systems related with Green economy, reduction of AT&C losses reduction, self healing and Peak load management issues
- ❖ Comparing Smart Grid with Conventional power grid.



Session-II (11.30AM – 12.30PM)

- ❖ 200MW Ranchi Micro grid project and Pondicherry smart grid project
- ❖ Basic concepts of Smart meters, PMU, PDC, AMI, Fault passage indicator, Smart sensors and Electric Hybrid Vehicle
- ❖ Applications of Smart Grid

Totally 9 students from third year were participated. They got relevant information about Smart grid and its applications.

HIGH VOLTAGE ENGINEERING

A lecture on “Condition Monitoring of Power Transformers” was held on 18.08.2018 by Mrs. G. Shunmugalakshmi, Assistant Professor/ EEE at Class Room H4 for Special Interested Group (SIG) members. The main objectives of the session were

1. to know the critical parameters to be considered in the design of a transformer and
2. to know the different condition monitoring techniques involved in power transformers.

She discussed about the importance of transformer and the factors to be considered while designing a transformer. Then she gave a lecture on condition monitoring techniques of power transformers.



The session was started by 10.00 AM and completed by 12.30 PM. Totally 7 students from third year were participated and got the relevant information.

CONTROL AND INSTRUMENTATION

EEE department, Control and Instrumentation Special Interest Group (SIG), conducted a seminar on the topic “LEGO MINDSTORMS ‘EV3’” on 18.08.2018 in the EEE department, Control and Instrumentation Laboratory. The resource person's for the program was A.Jothi Meena (Final year EEE), S.Sindhu Muhila (Final year EEE)

They gave a brief introduction about Robotics and Lego Mindstorms ‘EV3 kit. They explained the sense of science processes, investigation (detection) and benefits of Robotics in future world. While making a robot the programming and the building techniques are the same while the assortment of the LEGO parts and the Sensors is different.

Students learnt about the Programable Brick, Sensors, Motors present in the Lego Mindstorms ‘EV3 kit and they learnt how to program the robot using “ROBOTC” Language.

Four number of prefinal year students of EEE attended the seminar for updating the knowledge in “ROBOTICS AND AUTOMATION”.The technical seminar was concluded with the discussion of students and the resource person's.



The session was started by 10.00 AM and completed by 12.30 PM. Totally 4 students from third year were participated and got the relevant information.

HIGH VOLTAGE LABAROTORY VISIT

As a part to share our modern state-of-the-art facilities, 57 final year students accompanied by three faculties from Government College of Engineering, Bodinayakanur, Theni visited our High Voltage Laboratory on 18.08.2018.

Session 1 (11.15AM -12.00 PM)

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 (1.30 P.M -3.00 PM)

Venue : High Voltage Laboratory

The following experiments were demonstrated to the students by *Dr S Senthil Kumar AP/EEE, Mrs T Bavisha AP/EEE & Mr. M. Bakrutheen AP/EEE* coordinated along with *Mr Subburaj, Technician/EEE*

1. Generation and Measurement of AC, DC & Impulse Voltage using Sphere – Sphere configuration
2. Flashover & Withstand test on 33kV Porcelain Insulator
3. Liquid Dielectrics Laboratory – Breakdown Voltage Test, Viscosity, Flash point/Fire point



SOCIAL AWARENESS CELL



As a part of Social Awareness cell of EEE department an awareness camp was conducted for **Thuraiyur, Kovilpatti** on **18.08.2018** in the topic “Electricity usage, conservation and safety”. The program was started with welcome address given by Vishnu Moorthi (final year B). Followed by that the session was started by **Dr.M.Ravindran Asso Prof(SG)/EEE** with the comparison of renewable and non renewable energy sources and method of thermal power generation. Then he explains the Advantages and disadvantages of thermal power plant like,

Advantages:

- Fuel cost of thermal power plant is relatively low.
- We can produce thermal energy almost everywhere in the world.
- Heat production System is simple compared to other system.
- Overall system cost effective.
- Easy mechanism.

Disadvantages:

- Huge production of Carbon-di-oxide (CO₂) in the atmosphere.
- Exhausted gases harms outside environment badly.
- Low overall efficiency.

Following the session Dr.M.Ravindran Asso Prof(SG) 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 **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.

ALUMNI INTERACTION

Mr. U.Ajith Kumar (2018 passed out), now working as “Design trainee” at “Fabrus Technologies Pvt. Ltd” in Chennai, and **Mr. D.Franklin (2018 passed out)**, now working as “Graduate Engineer trainee” at “Igarashi motors India ltd” in Chennai, came to our college on 13.08.2018. Both of them gave the introduction about the employment opportunities after the completion of the course and the nature of their working in their companies. In the Igarashi motors India ltd, Mr. D.franklin said about the motor’s commutation segment and designing of a new model used in automobiles and industries motors whereas in the Fabrus Technologies Pvt. Ltd, Mr. U.Ajith kumar described about his design department.

Both of them gave their own experience in the session of the interaction. The knowledge about machines which they studied in the second year machines subject is helpful now for their working nature. They also told about their interview process and salary packages and finally concluded with their speech by students question and answer section.



“One thorn of experience is worth a wilderness of warning”. Like wisdom is the knowledge of experience our alumni **Mr. Seenivasan Ramasubbu (MCI Arb) [2008- Batch]** project controls executive shared his 10 years experience in major construction projects in MNEA, India & Europe on 29th August 2018.

He told about the various opportunities available for electrical engineers in construction field. He also explained about the importance of electrical engineers in construction field. He advised to learn some software’s like ORACLE (primavera version P6), Microsoft excel, Tilos which will be very useful while starting career as an electrical engineer in construction field. He gave some websites like <https://www.accei.org> & <https://www.pmi.org> to know more about that field. He asked to download some books which will be very useful for learning the tactics in construction field. Finally he concluded his interaction by requesting to read more books. He told that the more books you read, the more things you will know, the more you that you learn, the more places you will go.

contact to him in [MAIL- ID:seenivasan.ramasubbu@hotmail.com](mailto:seenivasan.ramasubbu@hotmail.com)

PLACEMENT DETAILS



On behalf of the Chairman, Managing Director, Director, Principal, Head of the Department and staff members, we heartily congratulates the final year student **Ms.M.Anitha** who placed in Solartis Campus drive in our campus during the month of July 2018.



Ms. M. Anitha

- *To be Continued*

STUDENT EXPERIENCE IN FACING INTERVIEW

SOLARTIS INTERVIEW EXPERIENCE

- M. Anitha, Final, EEE-A

ROUND 1:

The first round was an online examination. It comprised of three sections

- Section I - 15 aptitude questions.
- Section II - 15 java questions.
- Section III- 15 SQL question.

All 45 questions were multiple choice objective type questions and negative mark was also allotted given for every incorrect answer. Being strong in basics helped me to crack this round.

ROUND 2:

The round 2 was also an online written examination which was held on an online platform called hacker earth.

- ✓ It consisted of 3 java coding each carried 100 marks and 3 SQL queries each carried 50 marks.
- ✓ Marks were allocated by the software itself depending upon our execution and compilation error

ROUND 3:

The round 3 was conducted like “Just a minute”. Everyone was requested to take a lot and we were asked to speak about that topic for about 5 minutes. Fluency of language and level of confidence was very important in this round.

ROUND 4:

Fourth and fifth round was conducted in Solartis technologies, Madurai.

Round 4 was technical interview.

The questions which were asked are:

- ✓ Self introduction
- ✓ How were your first three rounds?
- ✓ Speak some words about your just a minute topic
- ✓ Some basic java questions(oops concept)
- ✓ Asked to write some queries in SQL
- ✓ Have you completed
- ✓ any online certification course
- ✓ Will you able to learn new technologies and update yourself?
- ✓ Why you choose software field?
- ✓ Why solartis?

These are some questions which were asked in technical interview. They will check our confidence level and our answering ability. Being confident on your knowledge is very vital in any technical HR you face and being genuine is very important.

ROUND 5:

Round 5 was a general HR.

It was more like an discussion. I was asked to introduce myself. And then about my family background. Finally Salary package and work place details were discussed.

STUDENTS EXPERIENCE DURING INTERNSHIPS

Solar PV system with Maximum Power Point Tracking (MPPT) Controller for electrification of remote villages.

Kalasalingam University, Srivilliputhur.

In this modern world due to the overconsumption of the non renewable energy resources we are in a situation that we use the renewable energy resources effectively and save endanger non renewable energy resources. In renewable energy resources the generation of power using solar energy has many advantages like low maintenance cost, no waste production during the process etc. The MPPT algorithm is being used to extract the maximum power from the source to the connected load by varying the duty cycle under all the conditions.

The Perturb and observe method is the most common and easy method to implement. In this method, the voltage is altered by the controller in small amount from the array and measures the power. If the power increases the duty cycle is adjusted in such a way that no further increase in power could occur. It is also known as hill climbing method since it depends on the rise of the curve of the power against the voltage below the maximum power point and fall above the point.

The objective of the project is to design a Solar PV system with MPPT controller. The MPPT constantly calculates and maintains the maximum power output from the array by using a DC-DC converter and an arduino. The array is connected to the load through the DC-DC converter. The DC-DC converter is then controlled by MPPT controllers to reduce the power fluctuations by varying the duty cycle by comparing it with sensed voltage and current values.

The voltage from the converter is stepped down to the operating range of the arduino. Using the code created in the arduino the duty cycle is altered to maintain the output power near to the maximum power output.

The DC-DC boost converter circuit consists of Inductor, Diode, Capacitor, Load Resistance and a switch. The boost converter is being operated in two modes. In mode I the switch is closed and so the diode is open circuited since it is reverse biased. The current flows through the inductor in clockwise direction and energy is stored in the inductor by generating magnetic field. In mode II the switch is opened and the diode is forward biased, the current will be reduced since the impedance is higher. The magnetic field gets destroyed to maintain the continuity of the current to the load and hence the polarity gets reversed. Thus the two sources are in series causing a higher voltage output to charge the capacitor through the diode. The output voltage is being controlled by the duty cycle of the operating switch by varying its ON time.

The PV model is simulated using MATLAB Simulink. The model is developed from the Output current equation of the PV cell, P and O algorithm, Output equation of the boost converter. The maximum power is identified and the perturb values of voltage and current is given to MPPT controller. The PV characteristics -curve with different irradianations and temperature is being simulated and is compared with the real time test values.

D.R.Divya, Final year EEE

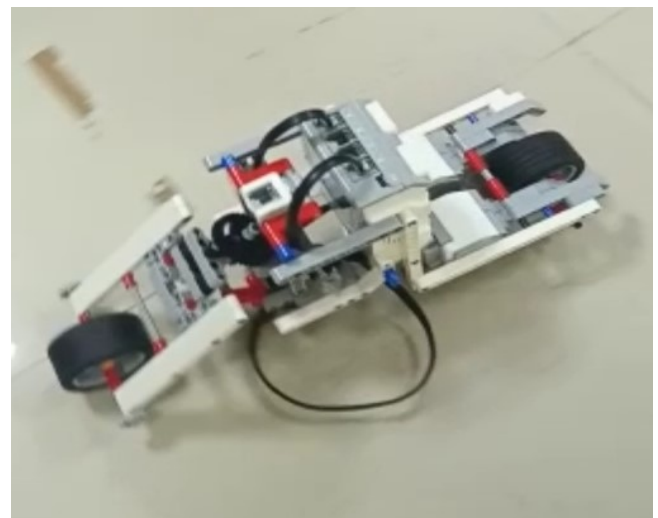
“AUTO BALANCING OF BIKE MODEL on LEGO Mind storms, EV3”

National Institute of Technology, Trichy

We were provided with an opportunity of attending a fortnight of **Internship at National Institute of Technology, Trichy (NITT)** to enrich our knowledge in ROBOTICS. 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 program was conducted in ROBOTICS AND CONTROL LABORATORY between June 4 and June 20. We were guided by Dr.V.Sankara Narayanan, Associate Professor/ EEE,NITT. We worked on “**AUTO BALANCING OF BIKE MODEL on LEGO Mind storms, 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.



AUTO BALANCING OF BIKE USING “GYRO
SENSOR”

By,
S.Abishek
S.Govinda Parasad
Final year, EEE

“Simulation and Performance Evaluation of DFIG based Wind Energy Conversion System”

Kalasalingam University, Srivilliputhur.

Hi Friends,

“Take a chance because you never know how perfect something might turn on”

As the quotes say I had a wonderful opportunity of attending an one month Summer Students Visiting Internship Programme-2018, conducted by the Kalasalingam Academy of Research and Education, Srivilliputhur. The campus was green and fresh surrounded by mountains together with the fruits of knowledge. The International Research Centre of the college conducted the programme. The programme was from June 1 to June 30. There were students from different college and different domains. I had an opportunity of working in the field of Renewable energy in their Centre for Green Renewable Energy under the guidance of Dr. D. Devraj, Senior Professor/EEE and Dean of SEET.

I worked on “Simulation and Performance Evaluation of DFIG based Wind Energy Conversion System”. It gave me a wonderful experience of working in my field of interest. It has also sowed the seeds for my growth by encouraging me to publish papers and journal. It gave me a chance to enrich in my field of interest Power Electronics. I had a chance of developing my knowledge in depth in MATLAB/Simulink. It was really an efficient programme and I take this juncture to thank one and all who helped me attend this internship programme.

Anandhi.R, Final Year,EEE

APTITUDE QUESTIONS

1. The product of two numbers is 120 and the sum of their squares is 289. The sum of the number is
Ans : 23
2. The salaries A, B, C are in the ratio 2 : 3 : 5. If the increments of 15%, 10% and 20% are allowed respectively in their salaries, then what will be new ratio of their salaries?
Ans : 23:33:60
3. A alone can do a piece of work in 6 days and B alone in 8 days. A and B undertook to do it for Rs. 3200. With the help of C, they completed the work in 3 days. How much is to be paid to C?
Ans: Rs.400

4. In how many different ways can the letters of the word 'DETAIL' be arranged in such a way that the vowels occupy only the odd positions?

Ans : 36

5. Two dice are tossed. The probability that the total score is a prime number is

Ans: 5/12

6. Find the odd man out 1, 4, 9, 16, 23, 25, 36

Ans : 23

7. If $35 + 125 = 17.88$, then what will be the value of $80 + 65$?

Ans : 22.35

8. Look at this series: 53, 53, 40, 40, 27, 27, ... What number should come next?

Ans : 14

9. SCD, TEF, UGH, ____, WKL

Ans: VIJ

10. The difference between a two-digit number and the number obtained by interchanging the positions of its digits is 36. What is the difference between the two digits of that number?

Ans: 4

11. A sum of Rs. 1360 has been divided among A, B and C such that A gets $\frac{2}{3}$ of what B gets and B gets $\frac{1}{4}$ of what C gets. B's share is:

Ans: Rs. 240

12. If successive discounts are 10%, 20% and 30%, then what is its single equivalent discount?

Ans: 49.6%

ALUMNI DETAILS

Dr. D.Nelson Jayakumar

Current Position: *Assistant Professor, Thiagarajar College of Engineering, Madurai*

Email ID: dnjayakumar@tce.edu



Educational Qualification

DEGREE	BRANCH	INSTITUTE	YEAR
B.E	Electrical and Electronics	National Engineering College, Kovilpatti	2001
M.TECH	Energy Systems Engineering	Vellore Institute of Technology	2004
Ph.D	Power system optimization	Anna university, Chennai	2014

- ✓ He published various works in reputed journals like Applied Soft Computing, Electric Power Systems Research, International Journal of Electrical Power etc.,. His area of research is Swarm intelligence for optimization. He is a life time member of Indian Society of Technical Education (ISTE).

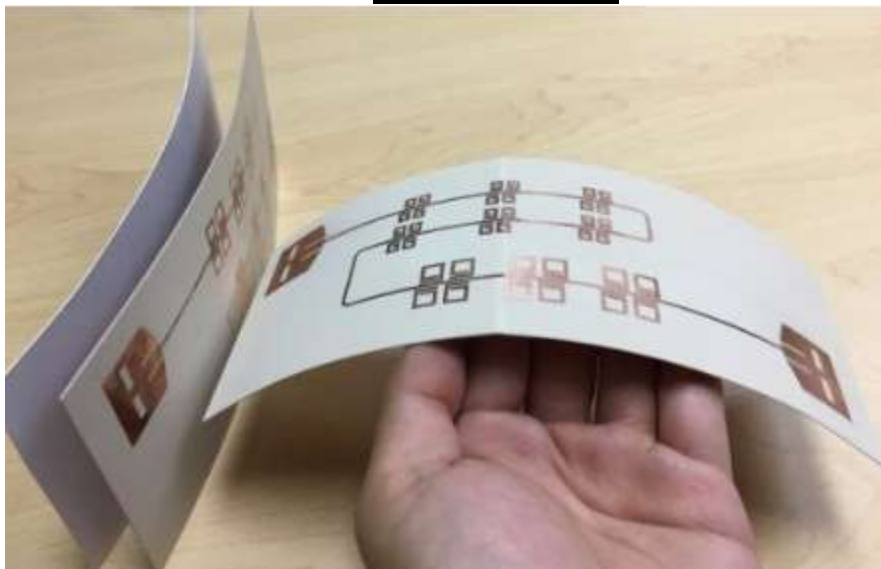
Awards / Recognition Received

1. Energy Auditor, Bureau of Energy Efficiency
2. Career Award for Young Teachers, AICTE

- *“Nothing happen by itself. It all comes to your way by your own exertions”.*

STUDENT ARTICLES

LIVE TAGS



Printable metal tags have been developed that can turn an everyday item into a smart device. The metal tags have been named LiveTag. These metal tags are made from patterns of copper foil printed onto thin, flexible, paper-like substrates and are made to reflect WiFi signals. The tags work essentially like "mirrors" that reflect radio signals from a WiFi router. When a user's finger touches these mirrors, it disturbs the reflected WiFi signals in such a way that can be remotely sensed by a WiFi receiver, like a Smartphone.

The tags can be tacked onto plain objects that people touch and interact with every day, like water bottles, walls or doors. These plain objects then essentially become smart, connected devices that can signal a WiFi device whenever a user interacts with them. The tags can also be fashioned into thin keypads or smart home control panels that can be used to remotely operate WiFi-connected speakers, smart lights and other Internet of Things appliances.

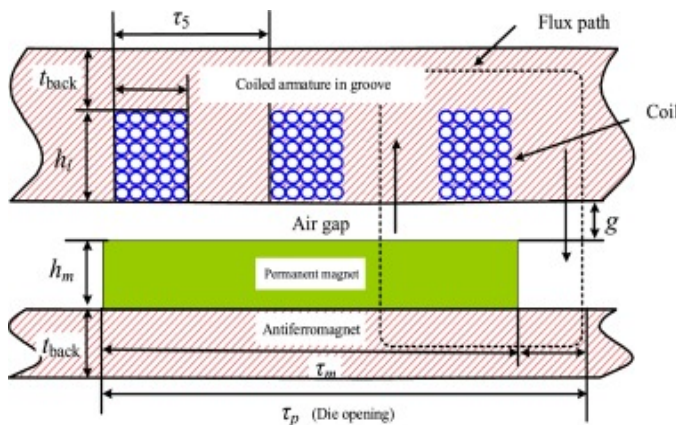
These metal tags are designed to only reflect specific signals within in the WiFi frequency range. By changing the type of material they're made of and the pattern in which they're printed, the researchers can redesign the tags to reflect Bluetooth, LTE or cellular signals. The tags have no batteries, silicon chips, or any discrete electronic components, so they require hardly any maintenance no batteries to change, no circuits to fix.

The researchers note some limitations of the technology. LiveTag currently cannot work with a WiFi receiver further than one meter (three feet) away, so researchers are working on improving the tag sensitivity and detection range. Ultimately, the team aims to develop a way to make the tags using normal paper and ink printing, which would make them cheaper to mass produce

- *Ms. G.Suba Shree, Second Year EEE*

Design of electro-hydraulic servo loading controlling system based on fuzzy intelligent water drop fusion algorithm

The aim of this is to improve the reasonability of electro-hydraulic servo loading controlling design and enhance motor performance. Therefore, the electro-hydraulic servo loading controlling and multiple-objective optimisation design method for the intelligent water drop algorithm (IWD), which is based on a two-phase weight balance and multiple-objective, is proposed. First, research is conducted on the electro-hydraulic servo loading controlling design by selecting two indexes to carry out the object design. Second, the two-phase multiple-objective IWD algorithm is designed; in the first phase, two knowledge bases are adopted for the IWD swarm position initialisation, namely, IWD flying direction designation and reference point storage. In the second phase, the weighted equalisation method is adopted to reform the optimised intensive search process, to ensure the diversity of IWD algorithm swarm and reference point position to enhance the search performance. Finally, the effectiveness of the proposed method is validated through a simulation experiment. The electro-hydraulic servo loading controlling system with the proposed controlling strategies has a smaller overshoot index of velocity than the electro-hydraulic servo loading controlling system based on traditional PI controlling. This is reflected in the stable performance of the controlling algorithm and the smaller current impact effect.



The electro-hydraulic servo loading controlling system with the proposed controlling strategies has a smaller lagging indicator of phase angles than the electro-hydraulic servo loading controlling system based on traditional PI controlling. This is reflected in the rapid performance of the controlling algorithm and the realisation of faster velocity adjustments. To hybridise with other optimisation algorithms to improve the algorithm performance further to consider applying the proposed optimisation algorithm into the optimisation design of other complicated large-scale engineering.

- *N.Rishika, Final Year, B- Sec*

TECHNICAL ARTICLE – STAFF MEMBERS

Ms.T. Bavisha, M.E.,

Assistant Professor

Electrical and Electronics Engineering

HYBRID HVAC/HVDC TRANSMISSION LINES

The global increase in the demand for electric energy and the connection of remote renewable energy sources is driving an expansion of transmission capacity. Historically, HVAC was used for long distance power transmission. An upgrade of the existing transmission lines from low voltage (110 kV, 150 kV or 220 kV) to high voltage (400 kV or 765 kV) level can relieve some level of congestion but not totally, since this grid will reach its capacity limits and, due to the extensive loading, stability problems will increase. The transmission efficiency and stability challenges led to the advancement and breakthrough in HVDC technology, allowing the possibility for HVDC transmission. Due to the lack of new transmission line corridors and public concerns about the erection of new transmission lines, increasing the transmission capacity by converting one of the existing multi-circuit HVAC transmission towers to hybrid HVAC/HVDC systems is highly beneficial. It is estimated that a converted bipolar DC system could have more than double the capacity compared to the AC circuit that is being replaced.

There are no explicit standards available for installing such HVAC/HVDC hybrid lines. For conversion of existing HVAC circuits into HVDC circuits, the available HVAC standard can be satisfactorily applied, as long as the mechanical loadings are corresponding. Essentially, the conductors remain unchanged when a conversion of an HVAC circuit into a HVDC circuit is planned. In principal, the weight of the insulators including the fittings will be smaller or the same at most compared to the previously installed porcelain or glass cap and pin insulators due to the application of composite insulators. In this way the stress at the suspension point is the same.

One of the major issues of HVAC/HVDC hybrid lines is the coupling between HVAC and HVDC circuits. The coupling can be capacitive, inductive and resistive coupling. The proximity between conductors of high voltage transmission lines energized with different types of voltages (HVAC and HVDC) sharing a common corridor (hybrid corridor) causes changes in the conductor surface gradients and the electrical environment in the vicinity of the lines. If the interaction between AC and DC lines is sufficiently strong to cause significant qualitative or quantitative changes in line performance, new experimental data and studies may be needed to develop new design rules to assure that the corridor is operating within acceptable limits. Other major research focus in hybrid HVAC/HVDC transmission is the effects related to corona discharges from the surfaces of AC and DC conductors. These include corona power losses, audible noise and ion currents. In addition, public acceptance of hybrid HVAC/HVDC lines is being investigated.

STUDENTS ACHIEVEMENTS

S.No	Name of Students Participated	Sports/Paper Presentation/Quiz/Workshop	Duration	Place
1	J.Kalyankumar	Cricket Match	01.09.2018	FX Engineering College, Tirunelveli
2	P.Ramkumar M.Ranjith King Jimson S.Samuel Subash K.Shunmuga Sundaram	Quiz competition	29.08.2018	Holy cross college, Nagerkovil
3	S.Jeyaram R.Karthick	Zone – 18 Men Volleyball Tournament	28.08.2018 to 29.08.2018	V.V.College of Engineering in Tissayanvillai
4	M.Aarthi Lakshmi S.Meenakshi	Zone – 18 women Volleyball Tournament	24.08.2018 to 25.08.2018	St.Mother Therasa Engineering college, Vagaikulam
5	V.Padmavathy	Woman Ball Badminton	13.08.2018 to 14.08.2018	Lakshmi Mills Hr.sec.School, Kovilpatti.
6	U.Anisha Subhasree M.Nivetha K.Swetha	Zone-18 Woman Basket Ball Tournament	17.08.2018 to 18.08.2018	PSN college of Engineering & Technology, Melathadiyoor
7	V.Deepika Rajam A.Priyadharshini	Zone-18 Woman Chess Tournament	16.08.2018 to 17.08.2018	Kalasalingam Institute of Technology, Krishnankovil
8	B.Mahalakshmi, C.Shibana M.Rajashree, V.Ramya S.Thanga Adhi Lakshmi K.Vishnu Pirya	Paper Presentation (Participation)	02.08.2018	K.Ramakrishna College of Engineering, Trichy.
9	A.Maria Joevin, R.Muthu Ganesh, M.Parthasarathy A.Perumal Samy P.Pon Ganesh, K.Santhosh	Workshop on Arduino for beginners (NET-2018)	18.08.2018	IIT Madras, Research Park, Chennai
10	C.Gurunathan P.Gurusubramanian S.Karthirvel Mari P.Kannan P.Mohamed Safeek S.Murugan	IOT Workshop	21.07.2018	Pantech Solutions, Madurai
11	S.Govinda Prasad, P.Vignesh	MadurAI - Hackathon	25.08.2018 & 26.08.2018	HCL Campus, Madurai

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