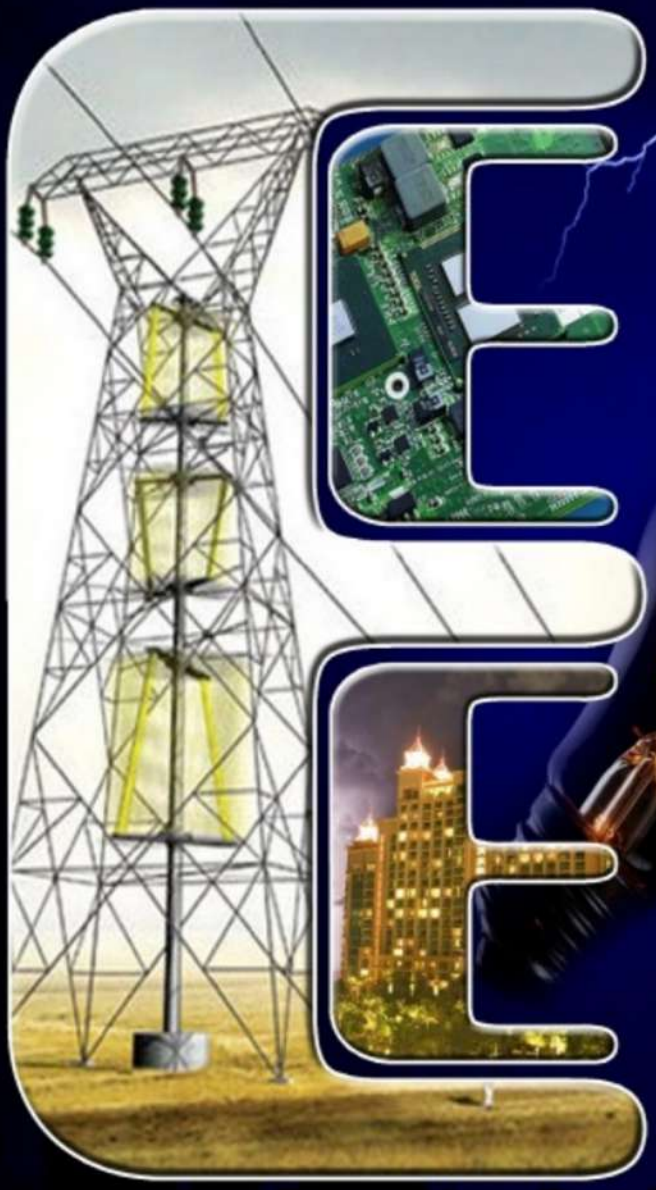
ROHINI
COLLEGE OF ENGINEERING & TECHNOLOGY

Department of Electrical and Electronics Engineering

FEEDERS-2017

EEE Association



Magazine Edition

Volume:2 ISSUE:2

VISION

To create technically competent technocrats to meet the demand of Electrical and Electronics industry and societal need for the well being of human kinds.

MISSION

M1. To provide knowledge and skills necessary for professional Development in Electrical and Electronics Engineering.
M2. To promote research and creativity in the area of Electrical and Electronics Engineering.
M3. To promote team work and professional conduct in sociological activities.

PROGRAM EDUCATIONAL OBJECTIVES

PEO 1: Graduates of the programme will posses career in technical and allied fields.
PEO 2: Graduates will have the ability to adapt to the growing technological requirement of the society through lifelong learning and team work.
PEO 3: Graduates of the programme will possess knowledge to pursue higher studies.

Shri.K.NEELA MARTHANDAN
CHAIRMAN
Rohini College of Engineering and Technology

MESSAGE

As A Chairman of Rohini College of Engineering and Technology. I feel proud that the students of Electrical and Electronics Engineering Department are releasing a magazine RCET is a dream project for me and I am happy that RCET is taking a proper shape with the co-operation of all concerned. Students are the real assets of RCET and when they realize their responsibilities, RCET will always remain above all other similar Institutions. I take this opportunity to wish all the students a bright future.

Prof.N.SUBRAMONIA PILLAI
PRINCIPAL
Rohini College of Engineering And Technology

MESSAGE

It is a great pleasure for me that our Electrical and Electronics Engineering department is releasing a magazine. The magazine is presenting a glimpse of the growth of the institution on many fronts. The essential purpose of a magazine is to inform, engage, inspire and entertain a diverse readership - including alumni, parents, students, faculty, staff and other friends of the college - by telling powerful stories that present a compelling, timely and honest portrait of the college and its extended family. This magazine has made an earnest attempt in this direction and brought out certain aspects of the college to the eyes of the public so that they may understand and know the college even better.

The college has been simply unstoppable in its progress as it has been actively involved in various activities that have brought to light the hidden talents of the college students and staff. The highly qualified and dedicated members of staff have always stood shoulder with the management and have carried out their duties with a level of commitment. This magazine has recorded achievements of staff members and students of EEE Department, competitions won by the hugely talented EEE students, innovative projects carried out by EEE students with the guidance of EEE staff, among others. They stand as a witness to the monumental efforts taken by the management to make the college a centre of excellence in education and research. I wish the management, EEE staff and EEE students of the college success in their future Endeavour's.

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Dr.N.NEELA VISHNU
MANAGING DIRECTOR

MESSAGE

I understand that the students of Electrical and Electronics Engineering Department are coming out with a Magazine. As the Managing Director of Rohini College of Engineering and Technology, I feel proud about it. We have taken an oath that we will develop RCET to world class standard and provide an overall development to all the students. We march towards that goal. We are happy that the students of RCET are properly shaping up, facilitating us to meet our goal. I wish all success to the EEE students.

Prof.P.JEYA KUMAR
HOD / EEE
Rohini College of Engineering and Technology

MESSAGE

I am highly elated and proud to announce that our department of 'Electrical and Electronics Engineering' is inaugurating the FEEDERS Magazine Edition. As our EEE department acts as a pioneering department in preparing students to completely globally in their profession and to reach the pioneer levels of in intellectual attainment.

I deem that the FEEDERS Association and symposium will trigger the talents of the students and kindle the light of innovation and technology. It's a fact that we constant updating to establish ourselves in this revolving dynamic world.

I express my heartfull and sincere thanks to all conveners, colleagues and student is who are the backbone of this endowers.

I am happy and wish the technical symposium as well as the release of magazine a grand success.

"OUR HARD WORK TO BE GRAND SUCCESS."

Editorial Message

It is an occasion of immense pleasure for the Department of Electrical and Electrical & Electronics Engineering to publish the E- magazine "FEEDERS".

The Editorial board of department of EEE wants to thanks all the faculty members and students who have made this issue a success by providing an article .

This magazine focuses on the recent trends evolved in the field of electrical engineering & wants to provide advanced knowledge and awareness among the students about the same.

The Editorial board also wants to thanks the Management of the Institute and Head of the department for inspiring us to go forward in publishing this magazine.

Editorial Board

Prof. G.K Jabash Samuel (Editor in Chief)

Prof. V.Ponselvan (AssociateEditor)

Mr. N.Naveen (Assistant Editor)

SEMINARS/WORKSHOPS ATTENDED BY FACULTY

No	Name of the Faculty	FDP/SSTP Topic	Duration	College Name
1.	Mr.JEYAKUMAR. P	FDTP on EE6009 Power Electronics for Renewable Energy Systems	7 days	V.V College of Engineering , Tirunelveli
2.	Mr.G.K.JABASH SAMUEL	FDP on EE6801 – Electric energy Generation Utilisation & Conservation	7 days	Arunachala College of Engineering for Women
3.	Mr.PONSELVAN. V	1.FDP on EE6703 – Special Electrical Machines 2.FDP on EE6801 – Electric energy Generation Utilisation & Conservation	1. 7 days 2. 7 days	1.Arunachala College of Engineering for Women 2.Arunachala College of Engineering for Women
4.	Mr.MURUGAN. G	FDP on EE6801 – Electric energy Generation Utilisation & Conservation	7 days	Arunachala College of Engineering for Women
5.	Mr.BASKER .C	FDP on EE6801 – Electric energy Generation Utilisation & Conservation	7 days	Arunachala College of Engineering for Women
6.	Mrs.NITHYA. S	FDTP on EE6009 Power Electronics for Renewable Energy Systems	7 days	V.V College of Engineering , Tirunelveli
7.	Mrs.THANGASAKTHI.T	FDTP on EE6009 Power Electronics for Renewable Energy Systems	7 days	V.V College of Engineering , Tirunelveli

INDUSTRIAL VISITS:

The department is associated with various government, quasi-government and private industries in the field of Electrical Engineering.

Our students visit these companies to get a practical exposure to current work practices.

The details of the industrial visits are furnished below

Date of Visit	Name of Industry	Scope of Visit
10-8-2016	Transformer maintenance Unit/Thuckalay	Practical study of testing of transformer
31-3-2017	Koodangulam Atomic power station	To study about generation and distribution.
22-2-2017	Dalmia wind form	TO study about FACTS devices

Participation of students in National and International Conferences:

ARAVIND V	A Novel Study Of 12kva Grid Tie Inverter In Hybrid Solar And Wind Power Plant	International conference	Tamizhan college of Engineering and Technology
NAVEEN K	A Novel Study Of 12kva Grid Tie Inverter In Hybrid Solar And Wind Power Plant	International conference	Tamizhan college of Engineering and Technology
SUKANYA	Design Of Charge Controller For Solar System	International conference	Tamizhan college of Engineering and Technology
JENIFA ROSE J	Design Of Charge Controller For Solar System	International conference	Tamizhan college of Engineering and Technology
PUNITHA K	Study Of Power Transmission For 10kw Hybrid Solar And Wind Power System	International conference	Tamizhan college of Engineering and Technology
ABASH G P	Study Of Power Transmission For 10kw Hybrid Solar And Wind Power System	International conference	Tamizhan college of Engineering and Technology

The students who undergo training/internships

NaveenPrabhakar.P	1 Month	DS Connectors and cables
Abinaya	1 Month	DS Connectors and cables
Arshad.S	1 Month	NICE PANEL electrical and Automation

List of students placed in Academic Year

(Batch 2013 – 2017)

S.no.	Student Name	Enrollment no.	Company Name	Appointment No
1	ARAVIND V	963313105001	Elcompo Electronic Industries Private Limited	ElCO/ET17/E-2143
2	JENIFA ROSE J	963313105002	Perfect Electronics ltd	PEIPL/TE17/E-14
3	ABASH G P	963313105301	iled lighting systems pvt ltd	ILEDLS/ET17/E-08
4	ANUSUYA DEVI S	963313105302	Elcompo Electronic Industries Private Limited	ElCO/ET17/E-2145
5	PUNITHA K	963313105304	Perfect Electronics ltd	PEIPL/TE17/E-16
6	SUKANYA R	963313105305	iled lighting systems pvt ltd	ILEDLS/ET17/E-11
7	SUTHAN S	963313105306	Tessolve semiconductor Pvt ltd	TSCB/DE/17-127

Flexible, Fast-Charging Batteries

Next to hyper-fast ground transportation, flexible batteries may seem trivial. But when the batteries that power our gadgets are freed from current technological restrictions, anything might be possible.

Here's one example: Scientists published an article about their work on a flexible aluminium-ion battery that looks like a pouch-flask you'd try to sneak into Coachella. But it can charge a phone in one minute, lasts 70 times longer than a traditional smartphone battery, and fits in any kind of gadget you can think of thanks to its malleable shape. Oh, and Elon Musk is **working on this problem**, too naturally. **Aluminium-ion batteries** are a class of rechargeable battery in which aluminium ions provide energy by flowing from the negative electrode of the battery, the anode, to the positive electrode, the cathode. When recharging, aluminium ions return to the anode.

Aluminium-ion batteries are conceptually similar to lithium-ion batteries, but possess an aluminium anode instead of a lithium anode. While the theoretical voltage for aluminium-ion batteries is lower than lithium-ion batteries, 2.65 V and 4 V respectively, the theoretical energy density potential for aluminium-ion batteries is 1060 Wh/kg in comparison to lithium-ion's 406 Wh/kg limit. The large difference in energy density potential is due to the fact that aluminium ions have three valence electrons while lithium ions only have one. Aluminium is also more abundant than lithium, lowering material costs.

Aluminium-ion batteries have a relatively short shelf life. The combination of heat, rate of charge, and cycling can dramatically decrease energy capacity. When metal ion batteries are fully discharged, they can no longer be recharged. Ionic electrolyte materials are expensive. Like most batteries, they have a far lower energy density than gasoline.

Prof G.Murugan/AP/EEE/RCET

FACTS ABOUT INDIA

- **Around 100 million years ago, India was an island.**
- **India's name is derived from the –Indus‖ river.**
- **Indus Valley Civilisation is the world's oldest civilisation.**
- **India has been the largest troop contributor to the United Nations Peacekeeping Missions since its inception.**
- **India has the world's third largest active army, after China and USA.**
- **interference.**
- **Chess was invented in India.**
- **Buttons were invented in India. Yes, your shirt's buttons.**
- **Martial Arts were first created in India.**
- **The world's biggest family lives in India. One man, 39 wives and 94 children.**
- **India is the world's largest importer of arms.**

But India has never *invaded* another country.

Prof ***G.Gopakumar*** */AP/EEE*

"We owe a lot to the Indians, who taught us how to count, without which no worthwhile scientific discovery could have been made."

-Albert Einstein.

A Smile

A smile costs nothing, but gives much-
It takes but a moment, but the memory of it usually lasts forever. None are so rich that can get along without it-
And none are so poor but that can be made rich by it.
It enriches those who receive, without making poor those who give- It creates sunshine in the home,
Fosters good will in business,
And is the best antidote for trouble-
And yet it cannot be begged, borrowed, or stolen, for it is of no value Unless it is given away.
Some people are too busy to give you a smile- Give them one of yours-
For the good Lord knows that no one needs a smile so badly As he or she who has no more smiles left to give.

Miss.K.PUNITHA/III EEE

"You've got to take the good with the bad, smile with the sad, love what you've got."

Energy Storage System

Introduction

Electrical power infrastructures are changing dramatically around the globe due to smart grid initiatives, the establishment of renewable and the resulting distributed nature of creating electricity, the need for independent micro grids to ensure grid reliability, new demands from end users, the need to reduce greenhouse gas emissions, as well as the capability to accommodate mixed energy resources. As a result, the power network faces great challenges in generation, transmission and distribution to meet new and many times unpredictable demands of providing coherent electricity supply. Electrical Energy Storage (**EES**) has been considered a game- changer with a number of technologies that have great potential in meeting these challenges. The suitability of a storage technology is determined primarily by its power and energy capacity and the rate at which these can be stored and delivered. Other characteristics to consider are round- trip efficiency, cycle life, calendar life, safety, reliability, effect on the environment and ramp rate (how fast the technology can respond to a command). Other energy storage technologies such as compressed air fly wheel, and pump storage do exist, but recent generation focuses on battery energy storage systems (**BESS**) and its related applications.

Overview of the Energy Storage Technologies

Today, most common battery chemistries are based on lead, nickel, sodium and lithium electro chemistries. Emerging technologies like flow batteries utilize various transition metals like vanadium, chromium and iron as the electro active element. Carbon electrodes are a critical part of several of these battery systems. . Each storage type has distinct characteristics, namely, capacity, energy and power output, charging/discharging rates, efficiency, life-cycle and cost that need to be taken into consideration for possible applications. Understanding their chemical characteristics and related regulations are critical steps for possible use. This includes the application, sitting, installation, operation and maintenance, as well as shipping and disposing of used batteries. This topic presents a survey of available and emerging battery technologies and

their design and performance characteristics. Electric Double Layer Capacitors (often referred to as ultra capacitors or super capacitors) are also addressed in this topic.

Lead acid batteries:

The lead-acid battery was invented in 1859 by French physicist Gaston Planet and it is the oldest and most mature rechargeable battery technology. There are several types of lead-acid batteries that share the same fundamental configuration. The battery consists of a lead (Pb) cathode, a lead-dioxide (PbO_2) anode and sulphuric acid electrolyte (H_2SO_4). The deep cycle/traction and the traditional stationary battery types are the most commonly used in Smart Grid applications. The deep cycle battery is composed of very thin plates and has a low energy density; however,it is relatively high power density makes it attractive for use in motor vehicles to provide the high current required for power engine starters.

The larger format and thicker plate stationary battery is used in a number of applications where interruption to the load cannot be tolerated. Common use in the energy space includes standby backup power for switchgear, turbine motors, data centres and any other application where reliability of the load is critical. Lead-acid batteries are widely used because they are less expensive compared to many of the newer technologies and have a proven track record for reliability and performance.

Nickel–Cadmium batteries

The nickel–cadmium battery (NiCd) is a rechargeable battery using nickel oxide hydroxide and metallic cadmium as electrodes. Wet-cell nickel-cadmium batteries were invented in 1899. A NiCd cell delivers around 1.2 volts output voltage until nearly the end of discharge. Compared with other types of rechargeable batteries, NiCd batteries offer satisfactory life-cycle characteristics and improved performance at low temperatures with a good capacity retention at high rates. However, the material costs are higher than that of the lead acid batteries. Moreover, NiCd cells experience the so called “memory effect” and high self-discharge rates which have a great impact to their performance characteristics. In addition, an environmental concern on the disposal of the toxic metal cadmium has dramatically reduced the use of NiCd batteries.

Nickel–metal hydride batteries

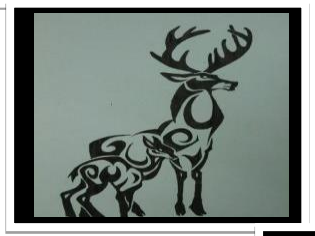
A nickel–metal hydride battery (NiMH) is also a type of rechargeable battery. Similarly to NiCd batteries, NiMH cells use nickel oxide hydroxide (NiOOH), which is formed in the positive electrode. The use of Cd in the negative electrode is replaced by a hydrogen-absorbing alloy. A NiMH battery can have two to three times the capacity of an equivalent size NiCd, and its specific energy of 80Wh/kg is about 50% of a lithium-ion battery. Main applications of the NiMH batteries are found in consumer electronics and plug-in electric vehicles and hybrid vehicles due to the technology maturity and their competitive cost to Li-ion batteries. However, Li-ion batteries are considered to most promising for the EV industry mainly due to their continuously falling cost and improved performance.

Lithium-ion batteries

In 1991, Sony and Asahi Kasei released the first commercial lithium-ion battery. A lithium ion battery (Li-ion) is a type of rechargeable battery where lithium ions move from the negative electrode to the positive electrode during discharge. The process is reversed during charging. With a high energy density, negligible memory effect and low self-discharge, Li-ion batteries are one of the most popular types of rechargeable batteries for portable electronics. In recent years, they are also growing in popularity for military, Plug-in electric vehicle (PEV), and aerospace applications. Different types of Li-ion battery chemistries present different performance, cost and safety features that can suit a variety of applications. For example, lithium cobalt oxide (LiCoO2) batteries are used in most handheld electronics due to their high energy density and low weight. Other types such as Lithium iron phosphate (LiFePO4), lithium ion manganese oxide batteries (LiMn2O4, Li2MnO3, or LMO) and lithium nickel manganese cobalt oxide (LiNiMnCoO2 or NMC) offer lower energy density, but can provide longer lifetime and inherent safety. These types are widely used for electric tools and medical equipment.

Prof V.Ponsevan/AP/EEE/RCET

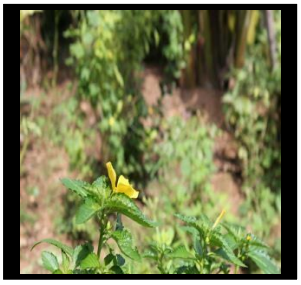
ARTISTS' CORNER



Every child is an artist, the problem is how to remain

Miss E.Vijitha/III EEE

Click-O-Clicks



Miss Abinaya /III EEE

Autonomous Cars

Autonomous cars use a variety of techniques to detect their surroundings, such as radar, laser light, GPS, and computer vision.

Advanced control systems interpret sensory information to identify appropriate navigation paths, as well as obstacles and relevant signage. Autonomous cars have control systems that are capable of analysing sensory data to distinguish between different cars on the road, which is very useful in planning a path to the desired destination. Some demonstrative systems, precursory to autonomous cars, date back to the 1920s and 1930s. The first self-sufficient (and therefore, truly autonomous) cars appeared in the 1980s, with Carnegie Mellon University and ALV projects in 1984 and Mercedes- Benz and Bundeswehr University Munich's Eureka Prometheus Project in 1987. A major milestone was achieved in 1995, with CMU's Nav Lab 5 completing the first autonomous coast-to-coast drive of the United States. Of the 2,849 miles between Pittsburgh, PA and San Diego, CA, 2,797 miles were autonomous (98.2%), completed with an average speed of 63.8 miles per hour (102.3 km/h). Since then, numerous major companies and research organizations have developed working prototype autonomous vehicles.

Among the potential benefits of autonomous cars is a significant reduction in traffic collisions the resulting injuries; and related costs, including a lower need for insurance. Autonomous cars are also predicted to offer major increases in traffic flow; enhanced mobility for children, the elderly' disabled and poor people; the relief of travellers from driving and navigation chores; lower fuel consumption; significantly reduced needs for parking space in cities; a reduction in crime and the facilitation of different business models for mobility as a service, especially those involved in the sharing economy.

K.Naveen

Third EEE

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