

## EEE – TECHNICAL MAGAZINE

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### DEPARTMENT OF ELECTRICAL & ELECTRICAL ENGINEERING

Anil Neerukonda Institute of Technology and Sciences  
Sangivalasa, Visakhapatnam - 530062.

ARC – EEE Technical magazine is a platform for EEE students and faculty to express their creativity and showcase their literary skills. ARC is designed to present to its readers the technical developments and technical papers that have been prepared by EEE students and Staff.

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I

*The EEE Department at ANITS envisages attaining a position of national excellence for graduating students that have experienced implementing theory into practice and are capable of succeeding in higher learning up keeping ethical*

*To promote learning and research in the field of Electrical & Electronics Engineering and to advance and disseminate technical and professional knowledge in shaping young engineers into future human resource appropriate to the needs of our nation*



## PROGRAM OUTCOMES

<b>1</b>	<b>Engineering knowledge:</b> Apply the knowledge of mathematic science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problem
<b>2</b>	<b>Problem analysis:</b> Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
<b>3</b>	<b>Design/development of solutions:</b> Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
<b>4</b>	<b>Conduct investigations of complex problems:</b> Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
<b>5</b>	<b>Modern tool usage:</b> Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
<b>6</b>	<b>The engineer and society:</b> Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
<b>7</b>	<b>Environment and sustainability:</b> Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
<b>8</b>	<b>Ethics:</b> Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
<b>9</b>	<b>Individual and team work:</b> Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
<b>10</b>	<b>Communication:</b> Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
<b>11</b>	<b>Project management and finance:</b> Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

12	<b>Life-long learning:</b> Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.
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## PROGRAM SPECIFIC OUTCOMES

1	<i>Design modern power system components to meet the identified needs within economical and environmental constraints.</i>
2	<i>Design, simulation, fabrication and testing of power switching devices, electrical drives and their control for industrial and research applications.</i>

## PROGRAM SPECIFIC OUTCOMES

1	<i>To prepare students with a strong foundation in basic sciences, mathematics and electrical engineering for productive engineering careers and enable them to pursue higher studies.</i>
2	<i>To equip the students with good analytical and design capabilities to solve present day electrical engineering problems and to realize the necessity of life-long learning to excel in their professional careers.</i>
3	<i>To produce the students with strong communication skills and to foster the ability to work in multidisciplinary teams with a sense of environmental awareness, professional and ethical values.</i>

## Message from HOD's Desk



I feel very elated and at the same time privileged to share a few words as you go through the pages of the magazine “ARC”. EEE department endeavors to help students to seek the best from the surroundings. The knowledge thus gained becomes a ladder for them to soar into greater heights. It’s often the collective effort that leads to the discovery and fulfillment of aspirations.

I feel proud to be a part of ARC an instrument in moulding the students. We try to shape every sphere of a student’s personality in the EEE Department. I take this opportunity to express my sincere thanks to all the members of the faculty and auxiliary staff for their sincere contribution in making this Edition.

**Dr. G Raja Rao**  
Professor & HOD

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## AEEEEA - ARC 2K19

Anits Electrical & Electronics Engineering Association (AEEEEA) was started in the year 2006-07. The Executive Committee, whose tenure is for one academic year, headed by the HoD of EEE as its Chairman consists of some faculty of EEE and some student members of final year and pre-final year of BE (EEE). The main aim of the Association is to assist the dept. in identifying the thrust areas and organizing the Workshops/Symposiums etc. It also helps in arranging Expert Lectures/Industrial Tours. It keeps a record of EEE alumni.



ARC2K19 is a national level technical symposium held at ANITS ENGINEERING COLLEGE conducted by the **“ANITS ELECTRICAL & ELECTRONICS ENGINEERING ASSOCIATION(AEEEEA)”**, Department of Electrical & Electronics Engineering. The vibrant and energetic title ‘ARC’ signifies the sparkling efforts of the participants. It provides the ideal platform for all the students to analyze themselves technically and present their skills. Its tagline “Joining elites” represents a special group of multi talented people and we felicitously invite you all to link up with the elite group and get the best out of it.

### Paper Presentation:

When you hear... You get to know....

When you see... You remember....

When you explain... You understand better...

This is true for many subjects experts. As a part of e-learning and to bring out the extent of concept realization by the students, a panel of technical support team will assist and scrutinise the Power Point Presentations as per the abstract submitted by the candidates. So, we welcome you to the dice of confidence and technical strength, i.e., Paper Presentations.

## Model Presentation:

If you see anything...You wish to test it or represent it on a small scale... A power plant of solar energy portrayed on a bench or table.. Great....

Bring that scientist with creativity....Concept...Knowledge and a desire of invention to the model presentations in this symposium....

## Technical Quiz:

EMF equation of a generator....??

Voltage across a load with high resistance connected to a 230 volts supply...??

Love being technical??

Ready to compete with peers who are also keen in learning about new things.... Brush up your subject toppers...

You can win the technical round... To all those who wish to test their knowledge about electrical and electronics...

We provide you the best stage.

## Ensemble:

During childhood...

We have different toys to play with...

As we grow up.....

We find a lot of things interesting around us...

Parents and teachers present us with storybooks and puzzles...

One such event is being hosted....A model is shown and materials are supplied....just a memory based event and how skillfully one can use his hands and creativity and solve the puzzle..

Time to assemble the available resources....

And we welcome you to this Event...

Ensemble...Assemble quickly to ensemble...

## Trouble Shooting:

"Every action has an equal and opposite reaction"

Newton discovered it regarding natural phenomenon.....

But Power systems engineers say

"After every sequence of action, there will be definitely a proportional consequence"

When power is generated chances of losses and also chances of faults occur...

Engineer chooses techniques to rectify the faults and reset the system back to original operation...

Here a flaw will be embedded in the question and the participants are required to solve these flaws...

For time being let's enjoy as Analysis Engineers...

Welcome to Trouble Shooting.

## Code N Code:

In a language, "Certify" is given as "Burgivx"...Now can u guess what "Adjacent" in the same language is written????

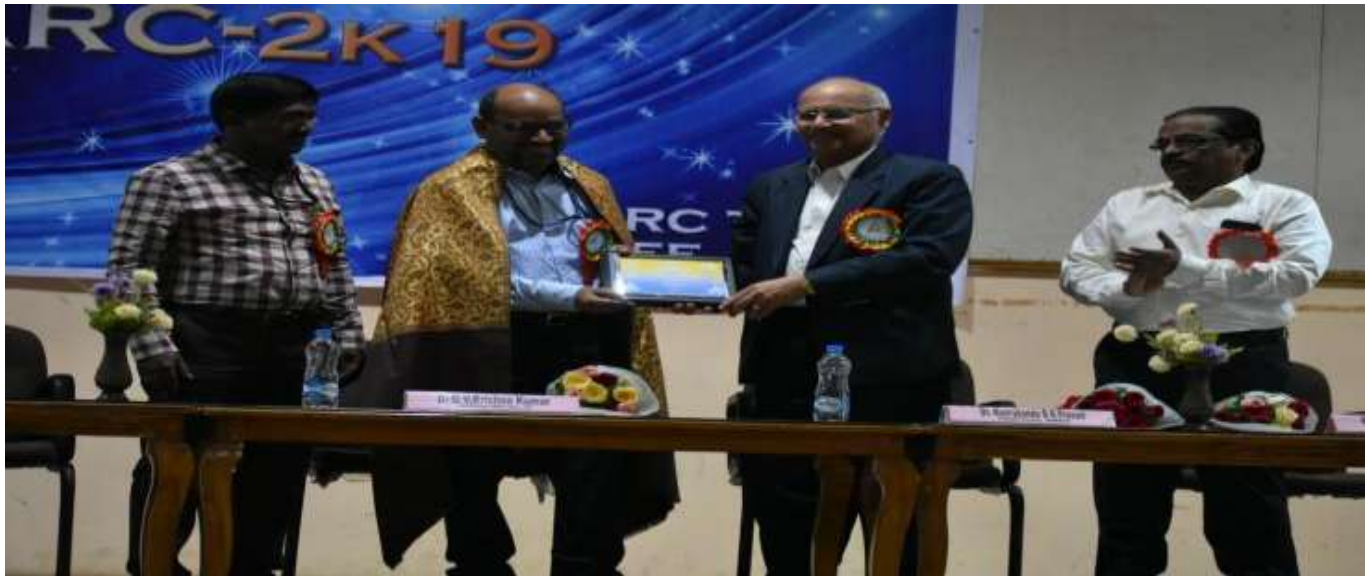
This is as simple as finding logic behind the formation of words or something similar...

So a similar task of decoding or encoding a particular detail given as a question completely in sentence format...

So this checks how u can code in technical software...

i.e., CodING and encoding event of this technical Symposium..





## ORGANIZING COMMITTEE

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# STUDENT PAPER PRESENTATIONS

# **ENERGY MANAGEMENT**

*R Bhagyasree, A J N S Lakshmi, 3/4 EEE, ANITS*

With increasing demand trending to new heights a greater need for operational efficiency, increasingly deregulating supply markets, and impending regulation of green house gases, suddenly energy management has become thrust to the forefront of long term planning. The term 'Energy management' may be defined as the judicious and effective use of energy to maximize profits or minimize costs and enhance competitive positions. This is a strategy of adjusting and optimizing energy using systems and procedures so as to optimize energy requirements. The primary objective of energy management is to achieve and maintain optimum energy procurement and utilization which may help in minimizing energy costs and mitigating adverse environmental affects. Managing and Optimizing energy consumption not only saves money but also in mitigating climate changes. Energy should be regarded as a business cost like raw materials or labor. This paper mainly speaks about managing energy and how it helps in mitigating adverse environmental affects. Companies can achieve substantially reduction in bills by implementing simple measures of energy management by the way of accurate measurement, decrease losses, and bring improvements in systems and controls.

## **Magnetic levitation (MAGLEV): A Technology to Propel Vehicles with Magnets**

*B V N Aashish, I sarath Chandra, 3/4 EEE, ANITS*

The term "Levitation" refers to a class of technologies that uses magnetic levitation to propel vehicles with magnets rather than with wheels, axles and bearings. Maglev uses magnetic levitation to propel vehicles. With maglev, a vehicle is levitated a short distance away from a "guide way" using magnets to create both lift and thrust. High-speed maglev trains promise dramatic improvements for human travel widespread adoption occurs. Maglev trains move more smoothly and somewhat more quietly than wheeled mass transit systems Their non-reliance on friction means that acceleration and deceleration can surpass that of wheeled transports, and they are unaffected by weather. The power needed for levitation is typically not a large percentage of the overall energy consumption. Most of the power is used to overcome air resistance (drag). Although conventional wheeled transport can go very fast, maglev allows routine use of higher top speeds than conventional rail, and this type holds the speed record for rail transportation. Vacuum tube train systems may hypothetically allow maglev trains to attain speeds in a different order of magnitude, but no such tracks have ever built. Compared to conventional wheeled trains, difference in construction affect the economics of maglev trains. With wheeled trains at very high speeds, the wear and tear from friction along with the concentrated pounding from wheels on rails accelerates equipment deterioration and prevents mechanically-based train systems from routinely achieving higher speeds. Conversely maglev tracks have historically been found to be much more expensive to construct, but requires less maintenance and have low ongoing costs. Across the world, Engineering has the common language and common goal-

“Improving the Quality of Life” of mankind without any boundary restrictions. To bring about this much needed change, Science and Technology need transformation by the frantic pace of market dynamics. What we need today is “Change Leaders” to bring about innovation, growth and a totally new work culture.

## **NON CONVENTIONAL SOURCES**

*K Uma Maheswari , Chintakayala Divya2/4 EEE, AU college of Engineering for women*

Energy is the key input to drive and improve the life cycle. Primarily it is the gift of nature to the mankind in various forms. The consumption of the energy is directly proportional to the progress of the mankind. With ever growing population, improvement in the living standard of humanity, industrialization of the developing country, the global demand for energy is expected to increase rather significantly in the near future. The primary source of energy is nature only that is non-convention energy sources. Non-convention energy sources are the energy sources which are renewable and ecologically safe. Such as solar energy, wind energy, bio-mass energy, ocean energy(tidal energy),wave energy, ocean thermal energy, geo thermal energy, nuclear energy etc...The important aspect in this is that harnessing of non-conventional energy sources is vital global energy for steering the global energy supplies towards a sustainable path.

## **MAGNETIC LEVITATION**

*T Venkatesh, 3/4 EEE , GMRIT, Rajam*

As the world continues to grow and as cities continue to become more crowded and congested, our normal modes of transportation will not be able to handle these overpopulated areas. The answer to this transportation problem lies in the world of electro magnetism and superconducting magnets. Electromagnets and superconducting magnets have allowed us to create a magnetic levitating train nicknamed “Maglev” that floats on the track instead of being directly on it. This has a lot of potential to create trains that are super fast with low maintenance requirements. China is the first country in the world to commercially use MagLevs, and has already helped ease the congestion on the six lane highway leading from the Pudong Shanghai International Airport to Shanghai Lujiazui financial district. This new technology has already helped China in a short period of time and can certainly help other cities around the world that are just as congested as Shanghai.

## **Improvement of Power System Stability by Simultaneous AC-DC Power Transmission**

*S.M.V.Subrahmanya Swamy,Tara Venkat Reddy,3/4 EEE, GVP College of Engineering*

This paper presents the concept of simultaneous ac-dc power transmission. Long



extra high voltage (EHV) ac lines cannot be loaded to their thermal limits due to this instability occurs in the power system. With the scheme proposed in this paper, it is possible to load these lines. This paper presents the concept of simultaneous ac-dc power transmission. Long extra high very close to their thermal limits. The conductors are allowed to carry usual ac along dc superimposed on it. The advantage of parallel ac-dc transmission for improvement of transient stability and dynamic stability and damp out oscillations has been established. The results show the stability of power system when compared with only ac transmission. The flexible ac transmission system (FACTS) concepts, based on applying state-of-the-art power electronic technology to existing ac transmission system, improve stability to achieve power transmission close to its thermal limit. Another way to achieve the same goal is simultaneous ac-dc power transmission in which the conductors are allowed to carry superimposed dc current along with ac current. Ac and dc power flow independently, and the added dc power flow does not cause any transient instability.

## **HIGH-FLYING SOLAR BALLOONS COULD PRODUCE CLEAN ELECTRICITY NIGHT AND DAY**

*Gollu Sai Shankar, Hanumanthu Anil Kumar, 2/4 EEE, ANITS*

Solar has a lot of potential for being a major part of our renewable energy future, from large utility-scale power plants to residential roof top solar arrays, but standard solar PV systems have a couple of weak points that keep them from being more widely adopted. A side from the relatively high initial cost of a solar PV array two other related issues continue to challenge the industry as a whole, namely the need for energy storage for night time, and the effects of cloudy or inclement weather on solar electricity production. The solar balloon concept being developed at Next PV could be one potential solution for both of those issues, as the system combines direct solar electricity production during the day with the production of hydrogen, which serves as an energy storage medium for producing electricity in a fuel cell, long after the sun goes down. The researchers claim that solar yields from a system of solar panels deployed above the clouds (6 km or 3.7 miles above the ground) could be "multiplied" (when compared with ground-based solar systems) by being free of the effects of cloud cover, and could eventually produce three times as much electricity, when compared on a square-foot basis.

## **SURVEY OF MICROGRID TECHNOLOGY**

*G. sateeshkumar ,T.sankara rao,3/4 EEE , GMRIT, Rajam.*

A microgrid is a group of interconnected loads and distributed energy resources within clearly defined electrical boundaries that acts as a single controllable entity with respect to the grid and can connect and disconnect from the grid to enable it to operate in both grid connected or island mode. Micro grids can be intended as back-up power or to support the main power grid during periods of high demand. These involve multiple energy sources as a way of incorporating

renewable power (such as wind turbines, photovoltaic panels, micro-hydro generators, biomass, fuel cells etc.) and provides flexible and high efficiency platform for distributed generation and renewable energy generation's integration and utilization. Many microgrid developments carried out in several countries, because microgrid offers many advantages, including better power quality and more environmentally friendly. microgrid development concerned in technology generation, microgrid architecture, power electronics, control systems, protection systems. Micro grid can also reduce power costs, enhance reliability and reduce carbon emissions. In this paper, on the basis of summarizing microgrid's development status all over the world, according to the differences and relations between microgrid and large power system, and considering two operating modes of microgrid, the key issues of microgrid operation management are studied. It is pointed out .that microgrid's stable operation and architecture, among which the dispatch of distributed energy storage and study about microgrid system development using grid tie inverter (GTI) & the advantages and disadvantages of this system should be paid more attention. Microgrid system can implemented using GTI, power transfer can occur from GTI to grid when GTI has power excess and grid supplying power to GTI when GTI power shortage.

## **ENERGY MANAGEMENT**

*S.Suma Chandana , K.Vidya Likhitha , 2/4 EEE,AU college for women*

Energy has become one of the main cost drivers in our society. Therefore technical systems and solutions that save energy and keep the costs down gain in importance. In buildings, equipment like air-condition and heating consume high amounts of energy. Even small adjustments can therefore lead to significant lowering of costs. With the help of sensor networks, the monitoring and controlling of facilities can be simplified and improved. On top of that, sensor networks enable remote access to sensor data, which reduces the costs of the data gathering process. With large scale sensor networks, the density of data both in space and time can be dramatically improved. This includes monitoring building's behavior at night, during special events and exceptional climatic events. Data can be then analyzed for future trends in building control, e.g. a building dynamically reacts to weather forecasts and special events.

## **BRAIN COMPUTER INTERFACE**

*K Sunitha, V Amulya, Dept. of power engineering, GMRIT, Rajam*

The Brain - Computer interface is a technology which allows the human to control a computer, peripheral (or) other electronic device with a thought. The electrophysiology of the human brain governs a complex array of neurological functions. The human brain is a large-scale interconnected network with common behavioral properties extending across large spatial areas. To gain full understanding of how biological neural networks encode and process information, it is necessary to simultaneously record signals from many neighboring neurons. A 256-channel integrated interface for simultaneous recording of distributed neural activity from acute brain slices is presented. An array of 16x16 Au recording electrodes is fabricated directly

on the die. Each channel implements differential voltage acquisition, amplification and band-pass filtering. In-channel analog memory stores an electronic image of neural activity. A 3 mm x 4.5 mm integrated prototype fabricated in a 0.35-  $\mu$ m CMOS technology is experimentally validated in Single-channel extracellular in vitro recordings from the hippocampus of mice and in multichannel simultaneous recordings in a controlled environment.

## **WIRELESS SPEED AND DIRECTION CONTROL OF DC MOTOR BY USING RF COMMUNICATION**

*A Sushma, B K L Prathyusha, 3/4 EEE, ANITS*

Every system is automated in order to face new challenges in the present day situation. Automated systems have less manual operation. So that the flexibility, reliabilities are high and accurate. Hence every field prefers automated control system. Especially in the field of electronics automated system are doing better performance. The main idea of developing this project is for providing an efficient and simple method for the control of speed and direction of DC motor using RF (Radio Frequency) technology. Wireless communication is the transfer of information between two or more points that are not physically connected. Distances can be short, such as a few meters for television remote control, or as far as thousands or even millions of kilometers. Among the various wireless technologies like IR (Infra Red), Bluetooth and WLAN, we have chosen RF technology, the main reason being it has a very long range of 3KHZ-300GHZ. It is also not affected by any obstructions. Commercial applications for wireless are door announcers, security and access systems, gate control, remote activation, score board and paging systems. This project uses RF modules, STT-433 MHz Transmitter, STR-433 MHz Receiver, HT12AE RF Encoder and HT12D Decoder. Four switches are provided at the transmitter end, to control the speed and direction of the DC motor which is connected at the receiver side. Two push-to-on switches are provided to rotate the motor in clockwise/counter clockwise direction. One push-to-on switch for increasing/decreasing speed of the motor. One more switch is provided to stop the motor.

## **MAGNETIC LEVITATION**

*Bantupalli Charan Kumar, Bantupalli Sravika, 4<sup>th</sup> And 3<sup>rd</sup> Year Eee, MVGR College Of Engineering*

Current land transportation is slow. Land is limited by friction. Flying is expensive. Air and land travel takes up a lot of fuel. Thus came into existence the concept of Magnetic levitation, no friction thus vehicles run with faster speeds, is highly reliable and is electrically powered consuming no fuel. Less energy consumption as there exists no rail track friction. It is sometimes said to be the first fundamental innovation in the field of railroad technology since the invention of the railway. Magnetic levitation is the effect caused by electro magnets where in an object is held aloft, without mechanical support. Magnetic levitation can be applied in two cases such as electromagnetic suspension and electro dynamic levitation systems. Applications are

such as maglev trains, bio magnetism, fast computers, electric generators, super conducting digital router, x- ray detectors etc. The best advanced version to save energy in terms of transportation is magnetic levitation.

## **CARBON NANOTUBES IN SOLAR PANEL TECHNOLOGY**

*G Sai Vamsi, Y Sasidhar, 3/4 EEE, ANITS*

Usage of the carbon nanotubes or graphite instead of silicon in solar panels .These carbon nanotubes are used for photo conversion and counter electrode construction, which are placed in liquid electrolyte through a redox reaction. The silicon semiconductors in a solar cell are geared toward taking infrared light and converting it directly to electricity .Meanwhile the visible spectrum is lost as heat .A new nano material being developed by this paper introduces the advancement in the solar panel technology. It presents about the group of researchers spread across the country could act as a “thermal emitter”, making the solar power significantly more efficient by scoping up more of that wasted energy. The infrared part of the light is relatively easy for conventional high efficiency solar cells to convert to electricity, and thermal emitter approach works within that frame work .A thermal emitter isn’t a parallel system for deriving electricity directly from the sun’s ray’s .Instead, this is an application or so called thermo photo voltaic principles. Researchers have estimated a theoretical 80% efficiency rating- much higher than the mid 30’s where most silicon based solar panels are stuck.

## **SMART TRAFFIC SIGNAL SYSTEM**

*G.Ajay Srikanth, 4<sup>th</sup> Year EEE ,GMRIT*

The project is designed to develop a density based dynamic traffic signal system. The signal timing changes automatically on sensing the traffic density at the junction. Traffic congestion is a severe problem in many major cities across the world and it has become a nightmare for the commuters in these cities. Conventional traffic light system is based on fixed time concept allotted to each side of the junction which cannot be varied as per varying traffic density. Junction timings allotted are fixed. Sometimes higher traffic density at one side of the junction demands longer green time as compared to standard allotted time. Thus I propose multiple traffic light control and monitoring system. The system tries to reduce possibilities of traffic jams, caused by traffic lights, to an extent. The system is based on microcontroller. The microcontroller used in the system is 89V51RD2 which is MCS- 51 family based. The system contains IR transmitter and IR receiver which are mounted on the either sides of roads respectively. The IR system gets activated whenever any vehicle passes on road between IR transmitter and IR receiver. Microcontroller controls the IR system and counts number of vehicles passing on road.

# NON-CONVECTION ENERGY SOURCE OCEAN THERMAL ENERGY CONVERSION

*Saripalli Anusha, Thatikonda Dharani, 2/4 EEE, ANITS*

A grid dynamic segmentation technique based on fault current limiter (FCL) is presented in this paper. The basic concept of this technique is to install the FCLs on appropriate ac lines according to network structure and segment multi-in feed HVDC systems into a number of sectors interconnected by these FCLs. Under normal conditions, the equivalent impedance of the FCLs is zero and does not affect power flow and bus voltage of the system. When short-circuit faults occur in the ac system, the FCLs are activated to limit the short-circuit current and obstruct the propagation of the faults among the sectors. As a result, for the dc systems, the commutation failure duration of the dc links is reduced, and the recovery of the dc systems is speeded, while, for the ac system, the power imbalance and the power flow transfer caused by the simultaneous commutation failure of the dc links are relieved. The transient stability of the whole ac/dc system is thus improved. The effectiveness of the proposed grid dynamic segmentation technique is demonstrated on two representative multi-in feed HVDC systems.

## **Improving Performance of Multi-In feed HVDC Systems Using Grid Dynamic Segmentation Technique Based on Fault Current Limiters**

*N Pavan kalia, P Ram Mihir, 3/4 EEE, ANITS*

A grid dynamic segmentation technique based on fault current limiter (FCL) is presented in this paper. The basic concept of this technique is to install the FCLs on appropriate ac lines according to network structure and segment multi-in feed HVDC systems into a number of sectors interconnected by these FCLs. Under normal conditions, the equivalent impedance of the FCLs is zero and does not affect power flow and bus voltage of the system. When short-circuit faults occur in the ac system, the FCLs are activated to limit the short-circuit current and obstruct the propagation of the faults among the sectors. As a result, for the dc systems, the commutation failure duration of the dc links is reduced, and the recovery of the dc systems is speeded, while, for the ac system, the power imbalance and the power flow transfer caused by the simultaneous commutation failure of the dc links are relieved. The transient stability of the whole ac/dc system is thus improved. The effectiveness of the proposed grid dynamic segmentation technique is demonstrated on two representative multi-in feed HVDC systems.



# EMBEDDED PASSWORD BASED ACCESS CONTROL SYSTEM USING I2C PROTOCOL

*Sukka S V S Amulya, Pyla Prasuna, 2/4 EEE ANITS*

The project is designed for access control with the help of a password. A keypad is connected to project to enter the password. For example fatal electrical accidents to the line man are increasing day to day during electric line repair due to lack of communication and coordination between the maintenance staff and the electric substation staff. This proposed system provides a solution which can ensure the safety of maintenance staff, eg: line man. The control to turn on? Off the line lies with the lineman only. This system has an arrangement such that a password is required to operate the circuit breaker (ON/OFF) .A line man can turn off the supply and comfortably repair it, and on return to the substation, he can turn on the line by entering the correct password. The system is fully controlled by microcontroller from the 8051 family. A matrix keypad is interfaced to microcontroller to enter password. The entered password is compared with the password stored in EEPROM interfaced to microcontroller of 8051 family. If the password entered is correct, then only the line can be turned on/off. Activation/Deactivation of the circuit breaker is indicated by lamp (on/off) provided in project. Furthermore the project can be enhanced by integrating a GSM module such that the password can be sent over a GSM network for user to change /enter password for a more secured system.

## **Super excitation and Flying excitation schemes of short circuit generators**

### **- A powerful tool for the analysis of short circuit studies**

*Kammakattu Bharath Reddy, Kandra Nava Durga Nandini, 2/4 EEE, ANITS*

When lightning strikes a power transmission line, high over voltages are generated that might cause flashovers between the phases. This can lead to short-circuit. Short-circuit might also occur when the line falls to the ground due to heavy storms or severe ice-conditions. No matter what causes short-circuit it always results in a flow of huge currents of several kA in the electrical network. The short-circuit currents impose high electromagnetically stresses on the network equipment. Therefore the high voltage equipment should be designed to withstand that high short-circuit currents without causing any damages to themselves. Hence, extensive tests are performed to verify short-circuit withstand capability. These high short-circuit currents are simulated on the electrical transmission and distribution equipment. Short-circuit currents up to 100kA can be achieved with help of specially designed high-power short-circuit generators. These generators are run by using a high power prime mover which is normally an electric motor. During the short-circuit tests, the driving motor is disconnected electrically from the network supply and the mechanical energy stored in the rotating mass supplies the short-circuit

current for the short duration of the test. The excitation current for and of the generators is supplied by a separate driven exciter consisting of a motor-generator set equipped with large fly-wheel. "Flying excitation" method which is used to provide the right value of test current and voltage The excitation system is a complex system and need to be properly set in order to satisfy the requirements of short-circuit testing. Therefore correct value of excitation time and an exciter voltage has to be chosen in advance to fulfil the criteria of short-circuit testing. The advantages and drawbacks of the super excitation scheme compared to the flying excitation are also discussed in the paper.

## **OPTIMIZATION TECHNIQUES IN THE POWER SYSTEM CONTROL**

*Adari Deepika Dhana Lakshmi, Shinagam Ramya, 2/4 EEE, ANITS*

In this paper we introduce some of the power systems control and operation problems. The management of the modern power system faces mainly optimization tasks. We show some single and multi objective optimization solutions, these are Decision making; Optimization of the schedule of renewable sources; Energy storage problems; Optimization of the network structure; Definition of the right power mix in single and also multi objective case, Regional energy trade. A large variety of applied technologies is described. In the industry the fast and robust methods are favored.

## **STATE ESTIMATION IN POWER SYSTEM STATE ESTIMATION**

*Kolli Karthik, Siriki Mohan Sai Kumar, 2/4 EEE, ANITS*

State estimation is a key Energy Management System(EMS) function, responsible for estimating the state of the power system. Since state estimation is a computationally expensive, it is not easy to execute it repetitively at short intervals, which is a requirement for real time monitoring and control. Hence in order to obtain a computationally inexpensive real time update of the state vector, tracking state estimation algorithms have been proposed and discussed in various research papers available in the literature. Tracking state estimation provides a fast real time update on the state of the power system without any physical modelling of the time varying nature of the system. Dynamic state estimation models the time varying nature of the system, which allows it to predict the state vector in advance. Hence proves to be a major advantage in security analysis and other control functions. Various techniques for tracking and dynamic state estimation are available in the literature. This paper presents a bird' view on different methodologies and developments in both of these techniques based on our comprehensive survey of the available literature

## IE(I) STUDENT CHAPTER

The Institution of Engineers (India) which came into being on the September 13, 1920 is the result of general desire of those engineers in India who are members of the great parent Institution in England — the Institution of Civil Engineers, Mechanical Engineers and Electrical Engineers, to form a corporate body which should protect their interest, provide means of exchange of views on professional engineering matters and medium of expression of authoritative opinions on engineering problems of public interest .

### **EVENTS:**

1. An event “Technical quiz” was organized on 25-08-2018 through IE(I) student chapter, ANITS on the eve of Engineer’s day. Around 65 students have taken part in the event. Challa Ajay Dileep has won the first prize and Konni Vagdevi has won the second prize.
2. An event “Technical Poster Presentation (Electrical Distribution system / Electric Hybrid vehicles)” was conducted on 08-09-2018 through IE(I) student chapter, ANITS. Around 24 students have participated in the event. Group with students Thaneti Akshitha, Nalluri Dileep Chigilipalli Swaroopa & Malla Jaswanth kumar has presented the best poster.

## CODING CLUB

Students club \*CODING AND DESIGN\* was inaugurated by Prof.G. Raja Rao garu on 15-09-2015. College clubs plays an important role for the professional growth of young engineers. Students can make use of this platform to expose their talents and innovative abilities in the field of Electrical & Electronics Engineering (EEE). This club is formed to improve the coding knowledge.

### EVENTS

#### 1. Design of logic and electrical circuits in MATLAB software

A design contest is organized in EEE department through CODING AND DESIGN CLUB to develop the design skills in MATLAB software on 15<sup>th</sup> September, 2018. Around 65 students have participated in the event. The contest aims to develop the design skills in “MATLAB SOFTWARE”. First prize is awarded to N. Tulasi ram (318126514077) and second prize to P. Priyanka Reddy (318126514042).

#### 2. CODE N CODE

A coding contest is organized in ARC event through CODING AND DESIGN CLUB to develop the coding knowledge in students on 6<sup>th</sup> March, 2019. The contest aims to develop the coding knowledge in the students. Around 20 students have participated in the event. First prize is awarded to M.S.C Mouli (318126514075) and second prize to V.K. Vijay Kumar(318126514101).

## GUEST LECTURES

A guest lecture on “Thermal Power Plant Power Evacuation” was organized for third year EEE students on 23<sup>th</sup> August 2018. The resource person is Sri K. Venkateshwara Rao, Senior Engineer, Electrical projects, BGR Energy Systems Limited, Chennai. His Lecture highlighted the constraints and procedure to be followed for Thermal power evacuation.



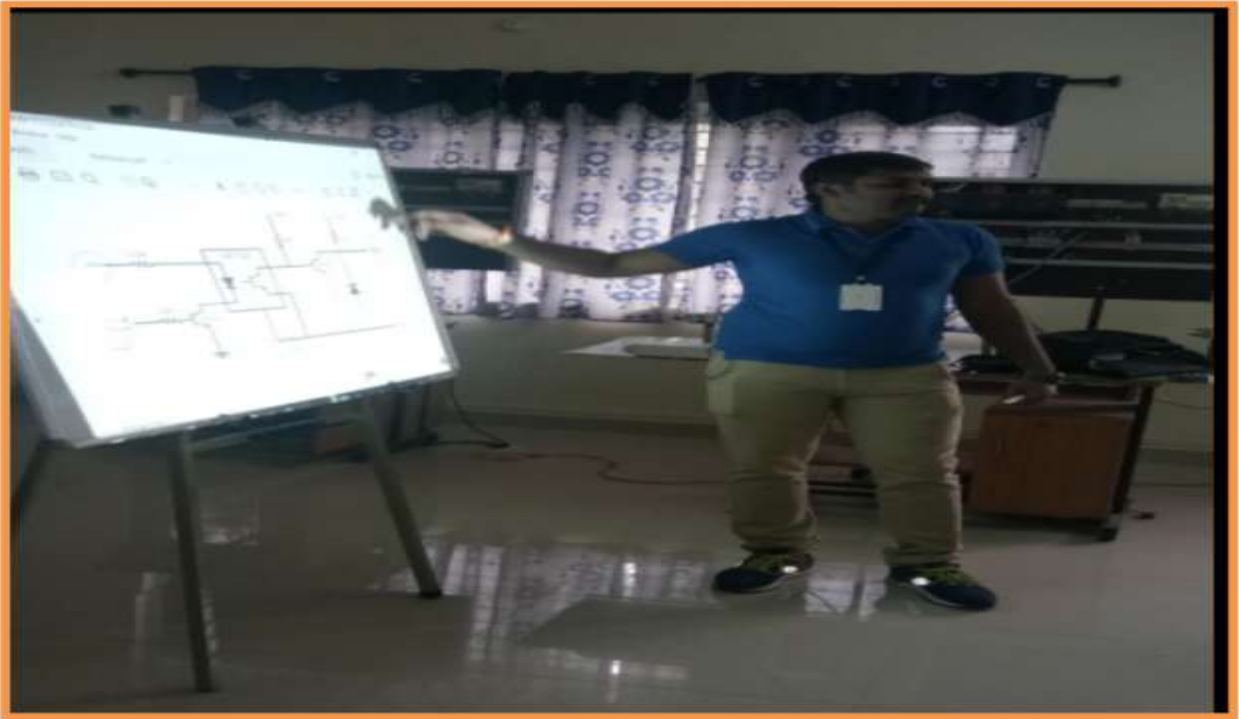
A guest lecture on “Power Quality and Tariff” was organized for final year students on 12<sup>th</sup> December 2018. The resource Person is Sri A Ramesh, DE (Load Dispatch), APTRANSCO, Hyderabad. He delivered the regulations on power quality in India, obligations for monitoring power quality and inconsistency in standards for power quality. He also delivered the tariff related to power quality.

A guest lecture on “Basics of Power Quality and extended up to distributed generation in power systems”, was organized by final year students on 6<sup>th</sup> March 2019. The resource person is Sri. K.S.N Murthy, CGM, APEPDCL, Visakhapatnam. His lecture highlighted power quality basics & in depth procedure to extend it up to distributed generation in power system.





A guest lecture on “Power Electronics applications for Renewable Energy Sources”, was organized by final year students on 15<sup>th</sup> March 2019. The resource person is Sri. D. Raveendra, CTO, Zunik Energies PVT Limited, IIT Roorkee. His lecture highlighted various power electronics applications for Renewable energy sources.



A guest lecture on “Ethical values” was organized for final year students on 27<sup>th</sup> January, 2018. The resource Person is Sri A Murali Mohan, AGM, Technical Training Institute, RINL, Visakhapatnam. Establishing a clear link between the purpose of the organization and the ethical values is very important to ensure that ethics becomes part of the culture and guides decision-making at all levels of the organization, promoting the desired behaviors.

## STUDENT ACHIEVEMENTS AND INDUSTRIAL VISITS

S. Deepika, is presented the paper on “Underwater Solar Systems” in STEP CONE-19 GMRIT, during 4th to 6th Jan 2019 and got the third place in best presentation.

B Kanaka Lalitha Prathyusha, secured Good in “Programming in C”, conducted by NIIT Academic Council on 28<sup>th</sup> November 2018.

P. Sai Vamsi, has secured Elite in Design of Photovoltaic System, an NPTEL Online Certification course, conducted by IISC Bangalore during Jan-Apr 2019.

V. Jayashree, has secured Elite in Microprocessors and Microcontrollers, an NPTEL Online Certification course, conducted by IIT Kharagpur during Jan-Apr 2019.

G.Nikhileshwar, has secured Elite in Electrical Machines-II, an NPTEL Online Certification course, conducted by IIT Kharagpur during Jan-Apr 2019.

P.M.R Kishore Reddy, has secured Elite in Electrical Machines-II, an NPTEL Online Certification course, conducted by IIT Kharagpur during Jan-Apr 2019.

K. Sharabha Reddy, has secured Elite in Cloud Computing, an NPTEL Online Certification course, conducted by IIT Kharagpur during Jan-Apr 2019.

P. B.Alekya, is presented the paper on “Biochips Technology” in SRUJANKURA Vignan University during 21st -23rd Feb 2019 and got the first place in best presentation.

P. Rama Devi, is presented the paper on “Biochips Technology” in SRUJANKURA Vignan University during 21st -23rd Feb 2019 and got the first place in best presentation.

P. Jyotshna, is presented the paper on “Super Capacitor Based Power Transfer” in ENCURSO 2K19 held in JNTU Kakinada, during 2nd and 3rd march and got the second place in best presentation.

T. Akshitha, is presented the paper on “Super Capacitor Based Power Transfer” in ENCURSO 2K19 held in JNTU Kakinada, during 2nd and 3rd march and got the second place in best presentation.

M. Lavanya, is presented the paper on “Prove your Talent” in ECLECTIQUE 2K19 held in JNTU Kakinada, during 11th and 12th Feb 2019 and got the second place in best presentation.

M. Ibrahim, is presented the paper on “Prove your Talent” in ECLECTIQUE 2K19 held in JNTU Kakinada, during 11th and 12th Feb 2019 and got the second place in best presentation.

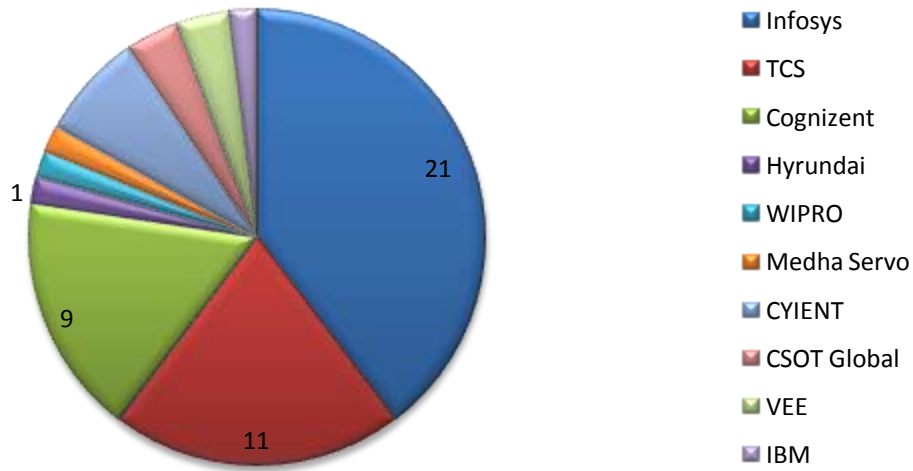
## ACADEMIC YEAR- 2018-19



Students of 3/4 B.E EEE have visited 132/33 K.V substation at Kalapaka

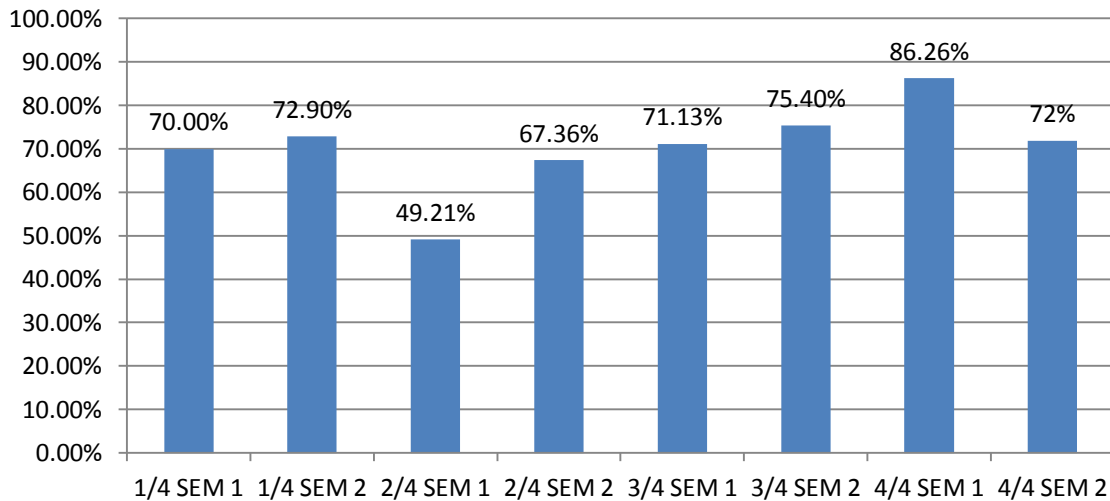
## PLACEMENTS

### 315 series Placements



## RESULT ANALYSIS

### RESULT ANALYSIS OF BATCH 2014-2018



## NSS CLUB ACTIVITIES

### 1. Relief camp on Srikakulam cyclone 14-10-2018

Very Severe Cyclonic Storm Titli was a deadly and destructive tropical cyclone that caused extensive damage to Srikakulam, Andhra Pradesh in the month of October 2018. This TITLI cyclone damaged many houses and trees. The NSS cell of ANITS has organized a relief camp on TITLI cyclone affected in Srikakulam. Students and faculty members have participated in the relief camp to distribute necessary commodities like blankets and basic nutritional food items like rice bags, sugar bags etc. victims of the cyclone were very kindly handled on the grounds of humanity. Media and public had appreciated the event.



**NSS Volunteers with Titli Victims**



**Food distribution for the needy people**



## **2. NRI Blood Donation 30-08-2018**

A blood donation camp is organized by the NSS cell of ANITS on the grounds of humanity. Students and faculty members in large numbers has participated in the event and donated blood. Fruits and nutritional beverages were distributed to those who donated the blood. The principal of the college has visited the camp, gave his view on importance of blood donation and appreciated the students and staff who has participated in the event.

## **3. Medical camp at NRI - 22 & 23 Aug 2018**

NSS cell of ANITS has organized a medical camp in August 2018 with collaboration with NRI hospital, Sangivalasa. The aim of conducting this camp is to properly guide the poor people in curing their health related problems. A large gathering of public has participated and took the service of medical camp. A few types of basic medicines were also distributed free of cost to the poor people. The principal of ANITS Engineering college has visited and appreciated the medicos and other organizing committee of the camp.

## **4. NRI Dental camp- 20-08-2018**

NSS cell of ANITS has organized a dental camp in August 2018 with collaboration with NRI hospital, Sangivalasa. The aim of conducting this camp is to properly guide the poor people in curing their dental related problems. A large gathering of public has participated and took the service of dental camp. A few types of basic dental medicines like tooth paste were also distributed free of cost to the poor people. The principal of ANITS Engineering college has visited and appreciated the medicos and other organizing committee of the camp.

## **5. Save water rally at Tagarapuvalasa and Chittivalasa- 27-07-2018**

The NSS cell of ANITS has organized a rally on creating awareness among the public about 'Importance of water'. The rally is conducted within the nearby villages of the college campus. The principal of college has started the rally at the college entrance gate. A large number of students and faculty members has participated and made this event succeed.



**Student participation in Save water for rally program**

#### **6. Fund raised for ANITS Non-Teaching staff (sudden expiry) 05-12-2018**

The NSS cell of ANITS has initiated the process of raising money for a non-teaching staff who went through sudden expiry. Money has been collected from all the departments of the college and finally returned to the family of deceased through the principal. A good amount of money is also raised from the college administration to the deceased.

#### **7. Eco Ganesha Program- 12-09-2018**

On the eve of Ganesh Chaturdhi college RACE team conducted Eco Ganesha Competition. Students of ANITS Engineering college had distributed eco-friendly Ganesha idols to the staff and nearby public on the act of protecting environment. Idols are made of recycled natural products and by products like rice husk ash, cane waste etc collected from the industries. 30 students and 10 faculty members has participated in the event. The principal of the college visited and appreciated the students who were making the idols.



**Judgement panel visit on Eco-friendly Ganesha program**

#### **8. Visakha Police commisionerate Election duties – 10-04-2019 & 11-09-2019**

The NSS cell of ANITS has involved in assigning the students to general election duties in Visakhapatnam urban and rural areas. The duties were assigned and controlled by the women police station of Visakhapatnam. Around 25 students have participated in these duties. However, these duties can be considered as service to the public.

#### **9. Tribute to APJ Abdul Kalam – 27-07-2018**

NSS cell of ANITS HAS conducted a program as token of gratitude to Former Indian President and well known Scientist Dr.A.P.J.AbdulKalam. The faculty fraternity and students of all departments shared their views on Kalam Sir Services to this world. The principal of the college has also participated and gave his view on Dr.A.P.J.AbdulKalam



**Paying tribute to Dr. A.P.J Abdul Kalam**

## **10. Swachh ANITS- 14-Aug 2018**

With the motive of creating awareness regarding cleanliness among the people, the NSS team of Mechanical engineering has conducted Swachh ANITS program to create awareness among people. NSS volunteers and students actively participated in getting the premises clean and green. Both Engineering and medical campus premises were cleaned by the NSS. With the motivation from Principal sir, the programme was done effectively with all the support from staff and students.

## **11. Group Discussion on Social Events- Feb 2019**

With the motive of encouraging students regarding public speaking skills, the NSS team of Mechanical engineering has conducted Group Discussion program among the students. In this, students have explored their views in many social events like water management, importance of smart cities etc. NSS volunteers and students are actively participated in group discussion and shares their views. At the end of session, Principal sir is appreciated the NSS coordinators for organizing this event in a smooth manner.

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**Student presenting seminar on water management**



**Student are involving in listening the water management topic**

## **12. Plantation in ANITS on INDEPENDENCE DAY- 15-Aug 2018**

On the occasion of Independence Day the NSS team of ANITS has initiated plantation program in the college campus on 15 & 16 August 2018. The students, the dean- examination and principal and faculty actively participated in this event and planted various plant samplings in college campus. Our faculty had also explained about the importance of plantation.



**Principal along with students in Plantation program**