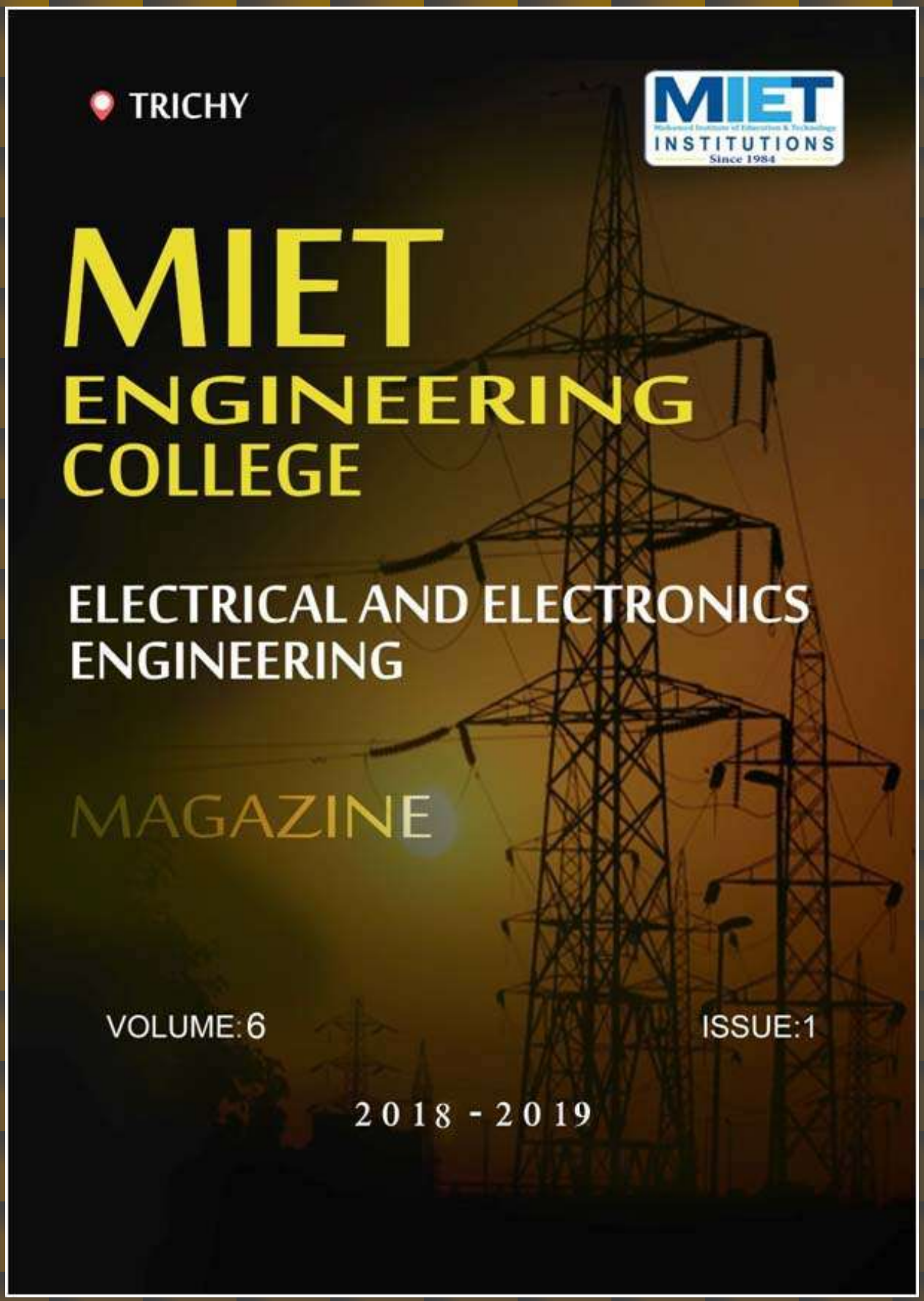
TRICHY
MIET
INSTITUTIONS
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MIET
ENGINEERING
COLLEGE
ELECTRICAL AND ELECTRONICS
ENGINEERING
MAGAZINE
VOLUME:6
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2018 - 2019

MIET ENGINEERING COLLEGE

EEE MAGAZINE 20

Er. A. Mohamed Yunus

Chairman

M.I.E.T Institutions

Chairman's Message:

It is my pleasure to greet the readers of the EEE Department magazine. I extend my wishes to all the for the meticulous work done by the blessings of the Almighty.

M.I.E.T Educational Institutions strives to excel by providing unparalleled excellence in academic prospective in a congenial atmosphere. The budding pillars here are given scrupulous value based education to mould themselves as diligent citizens. To build a harmonious society, M.I.E.T fosters comprehensive and collective practices uncompromising on the quality of education that is installed positively. The focus is also to nature intellectual and cognitive developments in the changing scenario as a catalyst to grow with the transformation in the country. A holistic essence of positive sign has spread throughout for Engineering and management education. The learning practices with innovation and interest will definitely upscale the standards to serve the future generation. This has been proved here through the immense programs conducted and attended by our staff and students. The continual involvement disseminated in our campus to keep abreast of all the advancement emerging globally is appreciable. I am here to encourage you to explore and seek great opportunities available to reach the pinnacle of eminence in all endeavors.

Dr. X.Susan Christina

Principal

M.I.E.T. Engineering College

Principal's message:

Nurturing creativity and inspiring innovation are two of the key elements of a successful education, and a college news letter is the perfect amalgamation of both. I am very much delighted to learn that our college is bringing out a college magazine "Digest". The college Newsletter will definitely help to showcase the activities that are happening in the campus. It provides a platform for exposing the merits and academic achievements of the students and faculty. This would definitely create an impact in the minds of readers, by way of providing larger visibility and dimension to the campus. I take this opportunity to congratulate the all the faculty coordinators and editorial members for their tireless efforts that have come to fruition in the form of this newsletter. I wish it all success and hope that this tradition will be carried through by the following generation of students to come.

Dr.U.Suresh Kumar

HOD

EEE Department

HOD Message:

Welcome to the Electrical and Electronics Engineering (EEE) department, M.I.E.T Engineering College, Trichy. It gives me an immense pleasure to lead the EEE Department of this prestigious institution. We take pride in our faculty; a self disciplined team with dedication and is a mixture of both academic and industrial experience working towards the growth of the students and organization. The field of Electrical and Electronics Engineering plays a key role in the national economic growth in terms of power sector, transport, industrialization and automation. In EEE department, we provide several opportunities to our faculty and students, through in-house training, workshops and training outside the college for further growth and development in their areas of expertise. We are creating a platform for students to achieve their dream jobs in Government sectors such as NTPC, Power Grid, Genco, Transco, NPDCL, SPDCL etc., and also in software and electronics design sectors. We are committed towards creating professional graduate community, which is capable to handle contemporary challenges required by the employer and society.

We welcome students, alumni, parents, industries, corporate companies and faculty to go through the website for more detail information and want to hear from you. Your suggestions, comments and even complaints will definitely help us to improve in moving to the next level of academic achievements and excellence.

Institution Vision:

- *To be a center of excellence in Technical Education through Technical, Ethical and Professional skills for meeting the diverse needs of the Society, in particular Muslim minority community and the Nation.*

Institution Mission:

- *To impart Quality Education, Training and Research in the fields of Engineering and Technology.*
- *To provide a conductive learning environment that enables the students to achieve professional and personal growth.*
- *To expose the contemporary issues of society, ethical practices and to create environmental awareness.*
- *To provide the required infrastructural facilities for developing the professional and innovative skills.*

Department Vision:

- *To be recognized as centre of excellence in Electrical and Electronic Engineering, contribution to the needs of stakeholders.*

Department Mission:

- *To impart quality education through comprehensive exposure, value additions and effective teaching learning process.*
- *To facilitate learning environment in view of challenges in the field of Electrical and Electronics Engineering.*
- *To provide platform for students to update the contemporary knowledge with professional quality and commitment to lifelong learning.*

Technical Symposium

The Department of Electrical and Electronics Engineering, M.I.E.T Engineering College conducted a "National Level Technical Symposium – "E3SPARTA'19" on 24-02-2018 (Thursday).

was invited as Chief Guest for the paper presentation and valedictory function held at auditorium. He delivered some key note address on the contemporary issues in electrical field to participants of various engineering colleges.

Er.A.Mohamed Yunus, Chairman, M.I.E.T Educational Institution presided over the function. Dr.X.Susan Christina, Principal and Dr.L.Jebaraj, Head of the Department – EEE, M.I.E.T. Engineering College, Trichy felicitated the Gathering.

The symposium included various events like paper presentation, Technical Quiz, Connectricals, silent sector and AD-MAD related to home department. Students around various engineering colleges like K.Ramakrishan College of Engineering - Samayapuram, K.Ramakrishan College of Technology-Samayapauram, TRP Engineering College-Siruganur, Jayaram Engineering College-Thuraiyaur, J.J. College of Engineering and Technology-Trichy, Mookambigai Engineering College-Trichy, Pavai Engineering College- Namakkal and Kongunadu College of Engineering – Thottiyam are participated actively

Technical Guest Lecture

The department of Electrical and Electronics Engineering organized one day Guest lecture entitled "Future scope in power system" for Final year students on 19th June 2018. Dr.R.M.Sasiraja, Associate Professor, Sethu Institute of Technology, Virudhunagar.

Publication by Faculty:

- *Mr.D.Tamilselvan, A.Abirami, Assistant Professor published a paper entitled "Implementation of fly back micro inverter with dual transformer to achieve High Efficiency for photovoltaic applications", in Global journal of Engineering Science Researches), Vol.17, Issue.4, pp: 193 – 204, 2018.*
- *Ms.A.Abirami, AP and Mrs.B.Muthuselvi, Assoc.Prof., published a paper entitled "Single Phase Cascaded Half Inverter based on photovoltaic applications", International Journal Electronics Engineering , Vol.17, Issue.2, pp: 715 – 719, 2018.*
- *Mrs.B.Muthuselvi, Assoc.Prof., A.Abirami Assistant Professor published a paper entitled "Newly Configured High Step up Chopper with coupled inductor and voltage doubler circuits", International Journal Electronics Engineering , Vol.10, Issue.2, pp: 720 – 725, 2018.*
- *G.Gurumoorthy, Assistant Professor published a paper entitled "ANFIS Based fault current limiter with energy management system", International Journal of scientific Research and review, Vol.7, Issue.9, pp: 528 – 535, 2018.*
- *Dr.U.Sureshkumar, Professor published a paper entitled "Horizontal Axis Sun Tracking System is implemented through Arduino Microcontroller for Rural Healthcare Buildings", International journal of scientific Research and review, Vol.7, Issue.12, pp: 777 – 789, 2018.*
- *Dr.M.Vijayasarathy, Professor published a paper entitled "An Improved Way to Compute Depth Maps for Multi-View Videos", IJRECE VOL. 6 ISSUE 4 2018.*

Conference / Paper Presentation / Workshop / Events attended by Students:

- *M.Elansezhiyan, P.Farookdheen, P.Manikandan, third Year EEE students participated in the IEEE Sponsored National Level Technical Symposium(KRYPTO-18) organized by the Department of Electrical and Electronics Engineering, National Institute of Technology, Tiruchirappalli on 2nd August 2018.*

- *S.Salmankhan & K.M.Mohammed Mufasil Mufeeth from final year EEE participated in the event "Paper Presentation" in the National level Technical Symposium, Gnanamani College of Technology, Namakal on 30th August 2018.*

- *S.Sowndharya & B.Prakash from final year EEE participated in the event "Paper Presentation" and won second prize in the National level Technical Symposium, Gnanamani College of Technology, Namakal on 30th August 2018.*

- *M.Jayabalan & M.Manimaran from final year EEE has participated in the National level Technical Symposium,(ELENTRUS-2K18) M.A.M College of Engineering ,Trichy on 31st August 2018.*

- *B.Prakash, C.M. Kirubanethi & W.Leoantony from third year EEE participated in the "XEMPLAR'18" National level Technical Symposium organized by Department of Electrical and Electronics Engineering, Velammal Institute of Technology, Ponneri on 7th September 2018.*

- *M.S.Mohamed Mustaq, M.Mohamed Yaseer, S.Ameersuhail, E.Muthumari, R.Rubi, J.Nandhini from Final year EEE students participated in one day National Level Workshop on "HANDS ON TRAINING in Advanced Embedded Systems" Organized by the Department of Electrical & Electronics Engineering, K.Ramakrishnan College of Engineering, Samayapuram on 7th September2018.*

- *P.Manikandan & N.Kalaiarasu from Third year EEE has participated in the National level Technical Symposium, (ELECTROVATARZ-2K18) PRIST University,Thanjavur on 19th September 2018.*

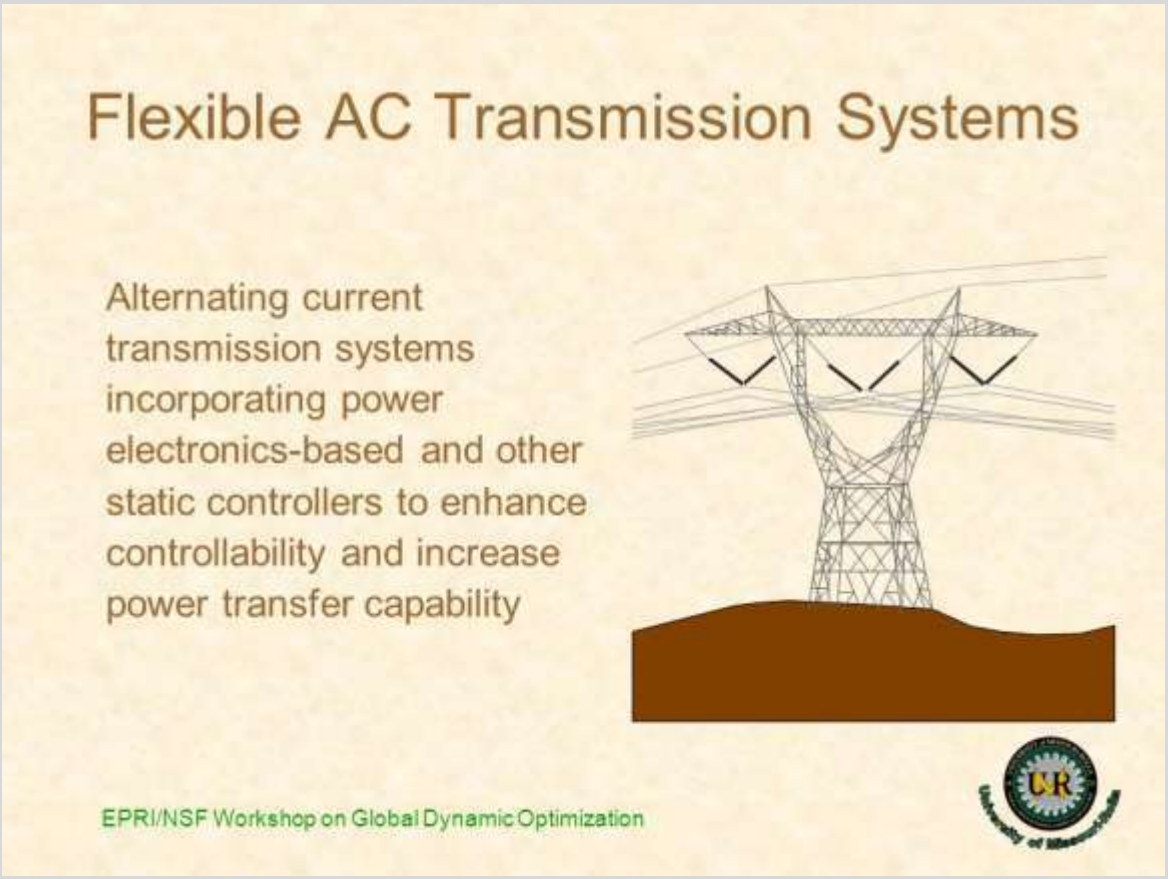
- *P.Manikandan & D.Salmankhan from third year EEE participated in the event "Tech Hunt" and won first prize in the National level Technical Symposium, Mookambhigai College of engineering, Pudukkottai on 28th September 2018.*

- *S.Brito & S.Sujith from third year EEE participated in the event "Mr.Hide world" and won first prize in the National level Technical Symposium, Mookambhigai College of engineering,*

Flexible A.C Transmission System

Jayaraj

(ASSISTANT PROFESSOR/EEE)



FACTS

1. POWER SYSTEMS

2. FACTS definition

3. FACTS controllers

4. Parallel controllers

5. Series controller

6. Series-parallel controllers

7. HVDC

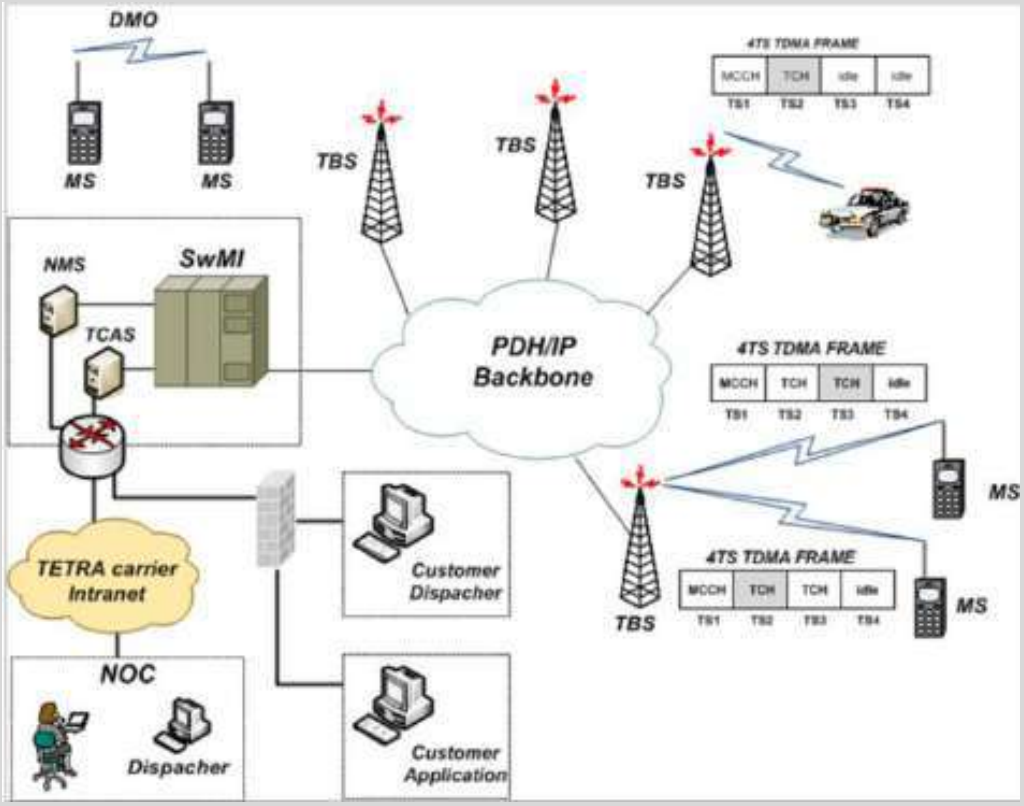
8. Others

Characteristics of Transmission Bottlenecks

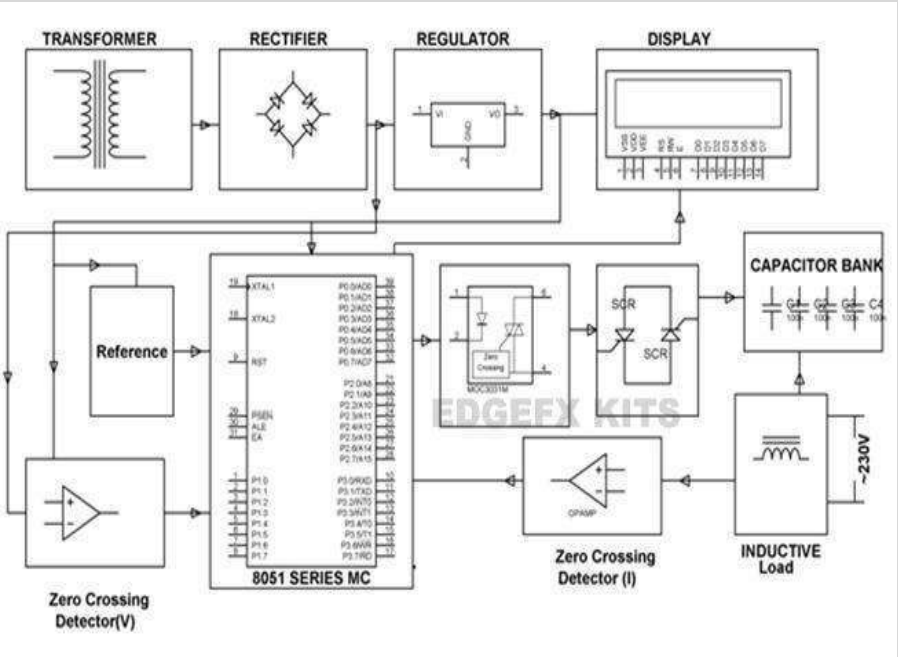
- *Steady-State Power Transfer Limit*
- *Voltage Stability Limit*
- *Transient Stability Limit*
- *Thermal Limit*
- *Short-Circuit Current Limit*

Conventional System Solutions to enhance Transmission capability

- *Series Capacitors (X)*
- *Switched Shunt-Capacitor and Reactor (V)*
- *Transformer LTC's (V)*
- *Phase Shifting Transformers (δ)*
- *Synchronous Condensers (V)*



Flexible AC Transmission System by SVC:



The above circuit can be used to improve the power factor of transmission lines using SVC. It uses thyristor switched capacitors (TSC) based on shunt compensation duly controlled from a programmed microcontroller. This is useful to improve the power factor. If the inductive load is connected power factor is lagging because of load current lagging. To compensate for this, a shunt capacitor is connected which draws current leading the source voltage. Then the improvement in power factor will be done. The time lag between zero voltage and zero current pulses is duly generated by operational amplifiers in comparator mode which are fed to the 8051 series of microcontroller.

Smart grid

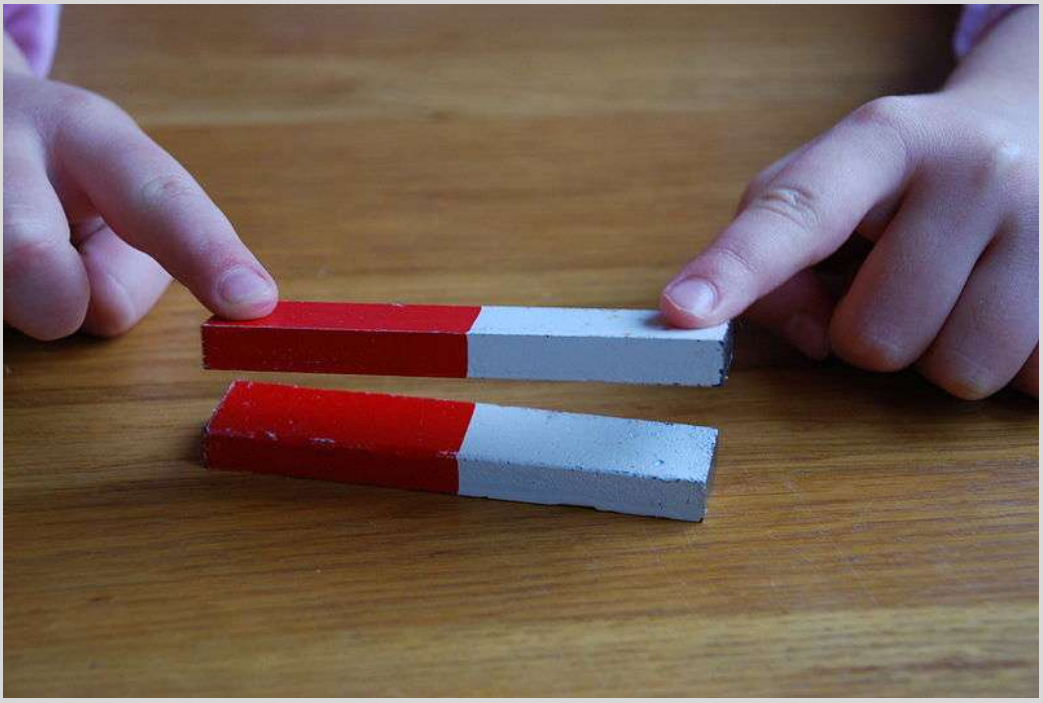
E.MUTHUKUMARAN

(ASSISTANT PROFESSOR/EEE)

Introduction

Magnetic levitation is one example of levitation in physics. It relies only on the forces generated by magnetic fields to overcome gravity. Right now you are probably thinking, isn't levitation with magnets as simple as the repulsion that takes place between oppositely poled bar magnets? Sorry to say but the answer is no and was no ever since 1842 when Samuel Earnshaw proved that no static configuration of permanent magnets allows for stabilized levitation].

What do we mean by stabilization? We mean that if the object, or in this case magnet, is displaced by a small amount, a force will be there to counteract this movement and push or pull the object back to its levitating position. If you happen to have a pair of magnets on hand, try using the repulsive force to balance them yourself, as seen below. After a few tries you will see that even if one floats with respect to the other for a fraction of a second it will soon fall off.



If levitation with magnets can't be done, according to Earnshaw, then why does this page even exist? As physicists, we have found ways around Earnshaw's Theory. By using little tricks such as diamagnetic materials, superconductors, and feedback systems [2-4] stable magentic levitation has been achieved. Learning the theory behind a physics principle is especially fun when you can see it actually being used in the real world. With that being the case, instead of going through boring derivations about magnetic levitation, we will focus on an important application, high-speed trains, known as maglev trains.

What are Maglev Trains?

As you may have figured out looking at the word maglev, maglev trains are trains that use magnetic levitation. Other than airplanes, fast and commercial transportation is limited. Maglev trains may be the answer to this problem. Maglev does not only refer to the train but also the track on which they run.

By using powerful magnets on both the train and the guideway, one is able to not only levitate the train which allows for higher speeds than the traditional wheel and track locomotive but also accelerate the train. To see what these trains typically look like, view the image below . You can see that these trains are aerodynamic to help reduce drag.

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Two common methods are currently being used to levitate maglev trains: electromagnetic suspension (EMS) and electrodynamic suspension (EDS). Prior to discussing these two methods, we will learn a little bit of physics, specifically Faraday's Law of Induction and Lenz's Law.

The Physics

Faraday's Law of Induction and Lenz's Law

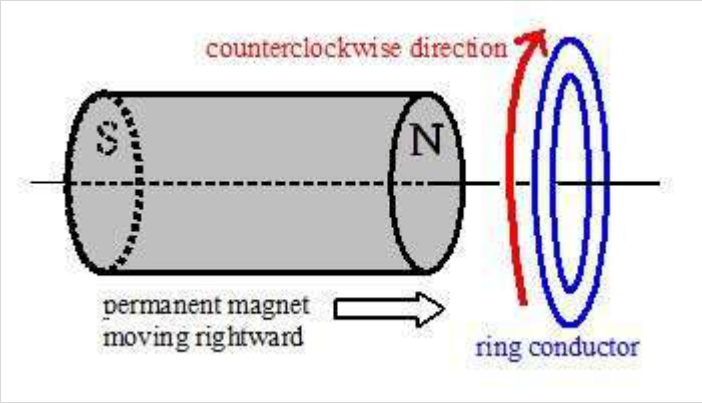
In simple terms, Faraday's Law of Induction says that a magnetic field has the ability to produce an electric field, by an induced current. We say induced, because the magnetic field "makes" it. The best way to understand the phenomenon is experimentally. Imagine a loop of wire that is made of a material that allows for the flow of charge, a conductor. Now connect that loop to an ammeter such that any induced current can be measured.

Initially the ammeter will read zero but what happens if a bar magnet is pushed towards or away from the loop, to within a close enough proximity? Try it yourself using the applet below

Hopefully you noticed that as you move the magnet through the loop or out of the loop that a current was produced (in the form of a voltage). Even if you place the magnet in the loop but do not move it no current is generated [6].

To summarize the important points above:
1. Current only appears when there is relative motion between loop and magnet
2. The speed of the magnet moving is related to the current
3. When moving the magnet in opposite directions, the current will flow in opposite directions (In the applet this corresponds to a positive or negative voltage).

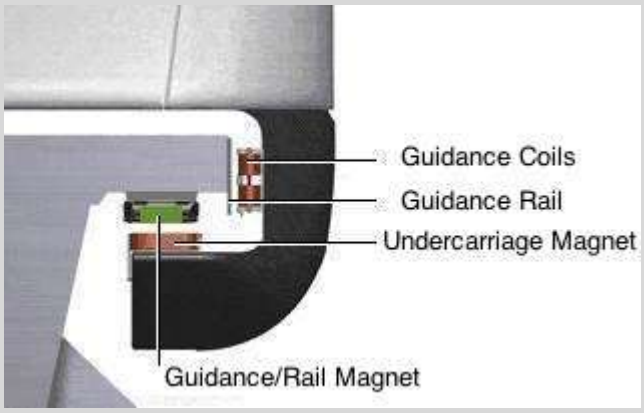
A current is generated and can flow clockwise or counter-clockwise around the loop, but how do we know its direction? To determine the direction, Lenz's Law is required.
In general it says that the current produced will be in a direction that creates a magnetic field that opposes the magnetic field that caused the induced current in the first place . This is best understood with an illustration [7]:



Stable Levitation of Maglev Train

As mentioned before the two main methods currently used for maglev levitation are electromagnetic suspension (EMS) and electrodynamic suspension (EDS).

Electromagnetic Suspension (EMS)
The first type of maglev levitation, EMS, requires two things: getting the train off the ground and stabilizing the train while it moves. The first requirement is met by using attractive forces between magnets [8]. Currently, EMS levitation practices are being applied in Germany on a system known as Transrapid [9]. To see one possible method for levitating the train, look at Transrapid's design, displayed in the figure below [10]. This system separates levitation and guidance, making the distinction easier to see.



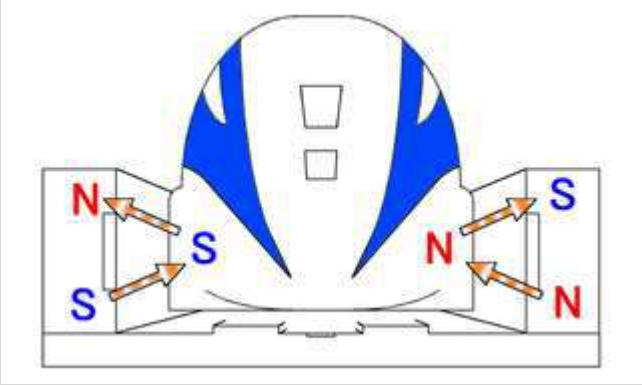
The figure shows that if the magnet on the guidance track is attracted to the magnet on the undercarriage, the train will levitate off the ground. It should be noted that no contact between the magnets is made since the strength of the attraction is only enough to get the train off the ground.

The magnets commonly used are known as electromagnets . Electromagnets are magnets that require electric current in order to produce a magnetic field. The classical example is the familiar current loop. The current travels in a direction that generates a magnetic field that allows for attraction.

When you take a bunch of loops you get a coil, a common electromagnet. The benefit of these magnets is that increasing or decreasing the strength of the current easily adjusts the strength of the field. For stability, additional electromagnets are used that can be easily modified when sensors detect the train displacing away from its equilibrium position [8].

ElectrodynamicSuspension(EDS)

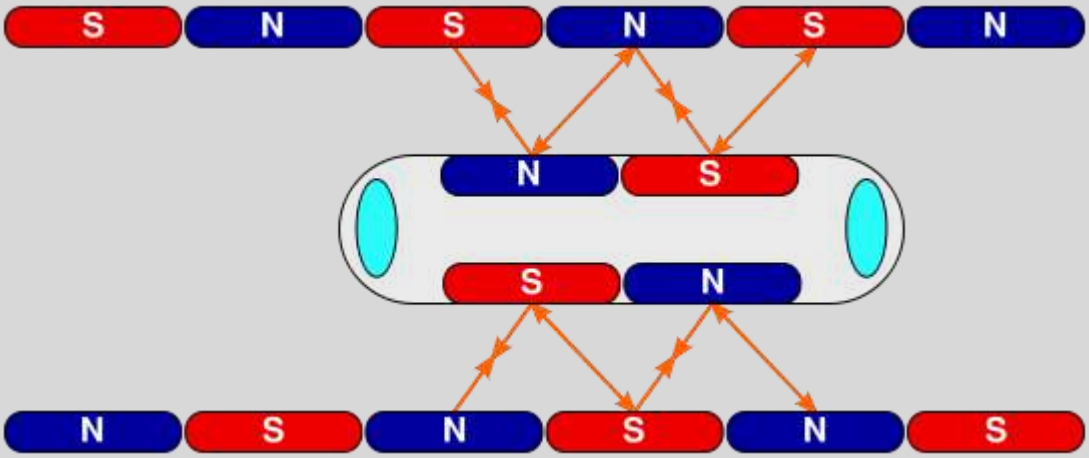
The second type of maglev levitation, EDS, uses the consequences of Faraday's Law and Lenz's Law. Unlike EMS, EDS relies on either a combination of repulsive and attractive forces or in some cases just a repulsive force [11]. In both cases it is a result of an interaction between coils in the guideway and magnets on the train. As the on-board magnet moves relative to the guideway coils a current is induced via Faraday's Law. When using a special coil that takes the shape of the number eight, the induced current can provide both attractive and repulsive forces that levitate the train . The illustrations below provide an easy way of picturing it .



Additional guidance coils are sometimes used but since the current in the coils depends on the position of the magnets on the train, any displacements are often self-correcting. If you understand Faraday's Law you may be asking to yourself, won't there be no current in the coils when the train is not moving? The answer is yes and because of this a minimum speed is required to get the train off the ground. At low speeds the train is equipped with wheels .

Now that we have the train in the air, how are we supposed to move it? There are a few alternative methods for accelerating the train [8] but here we will just provide a basic idea. One method uses propulsion coils, fancy electromagnets, that when using an alternating current, one that changes in polarity after a given amount of time, can push and pull the train.

The magnet that may have been initially pulling the train by attraction can push the train as it passes later by simply changing its magnetic property. Remember that electromagnets allow for this since the current can be electronically controlled.
By interpreting this as coils having north or south pole properties, the illustration below [13] provides a demonstration on how a maglev train could move.



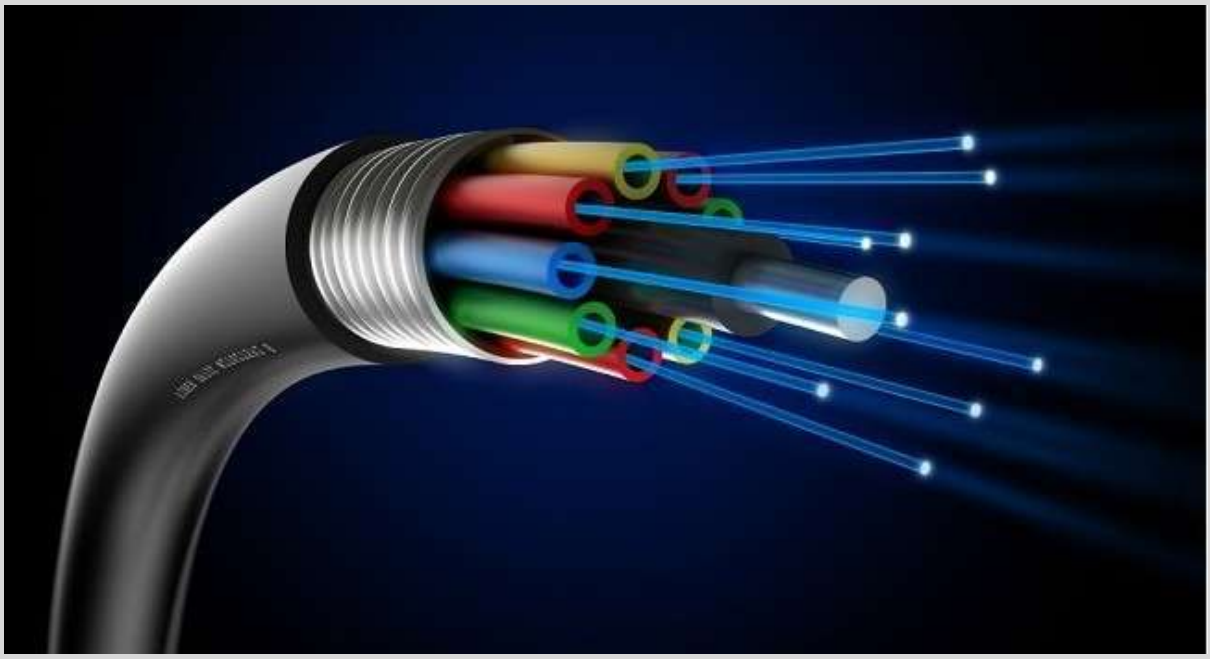
Summary

With technology consistently improving in the world it is likely that one day you will see or even ride a maglev train. If you happen to, remember that the entire system is based on the basic physics principles of magnets. High-speed movement is a result of magnetic levitation while propulsion is provided by the fine placement of electromagnets in the form of coils. Electromagnetic suspension and electrodynamic suspension are only two types of magnetic levitation and many other forms exist and even more are still likely to be developed.

FIBER OPTIC CABLE

B.Muthuselvi

(ASSISTANT PROFESSOR/EEE)

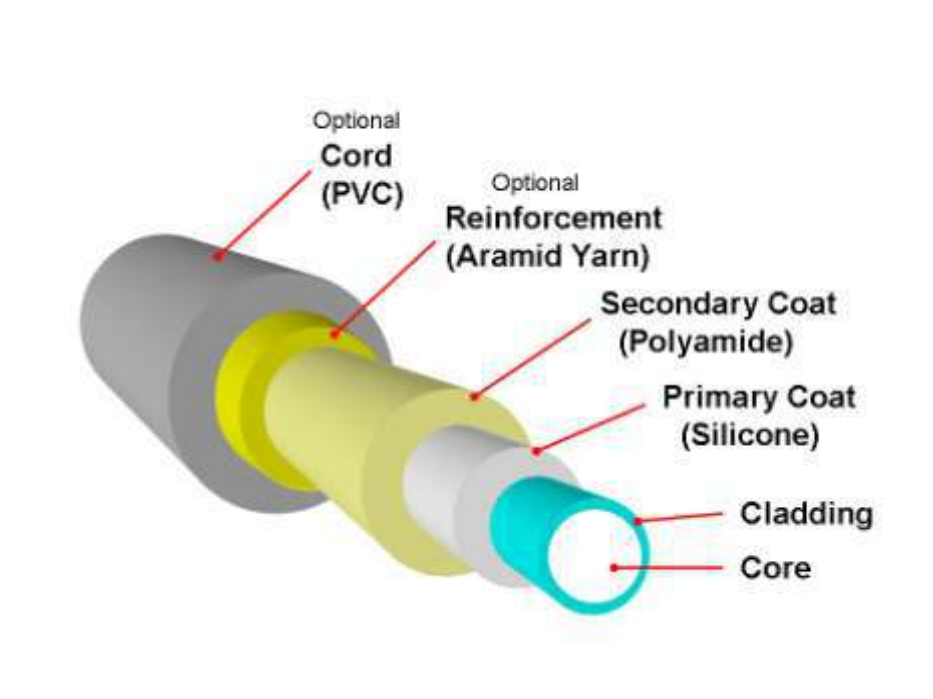


SPEED: Fiber optic networks operate at high speeds - up into the gigabits
• **BANDWIDTH:** large carrying capacity
• **DISTANCE:** Signals can be transmitted further without needing to be "refreshed" or strengthened.
• **RESISTANCE:** Greater resistance to electromagnetic noise such as radios, motors or other nearby cables.
• **MAINTENANCE:** Fiber optic cables costs much less to maintain.

In recent years it has become apparent that fiber-optics are steadily replacing copper wire as an appropriate means of communication signal transmission. They span the long distances between local phone systems as well as providing the backbone for many network systems. Other system users include cable television services, university campuses, office buildings, industrial plants, and electric utility companies.

A fiber-optic system is similar to the copper wire system that fiber-optics is replacing. The difference is that fiber-optics use light pulses to transmit information down fiber lines instead of using electronic pulses to transmit information down copper lines. Looking at the components in a fiber-optic chain will give a better understanding of how the system works in conjunction with wire based systems.

At one end of the system is a transmitter. This is the place of origin for information coming on to fiber-optic lines. The transmitter accepts coded electronic pulse information coming from copper wire. It then processes and translates that information into equivalently coded light pulses. A light-emitting diode (LED) or an injection-laser diode (ILD) can be used for generating the light pulses. Using a lens, the light pulses are funneled into the fiber-optic medium where they travel down the cable.



The light (near infrared) is most often 850nm for shorter distances and 1,300nm for longer distances on Multi-mode fiber and 1300nm for single-mode fiber and 1,500nm is used for for longer distances.

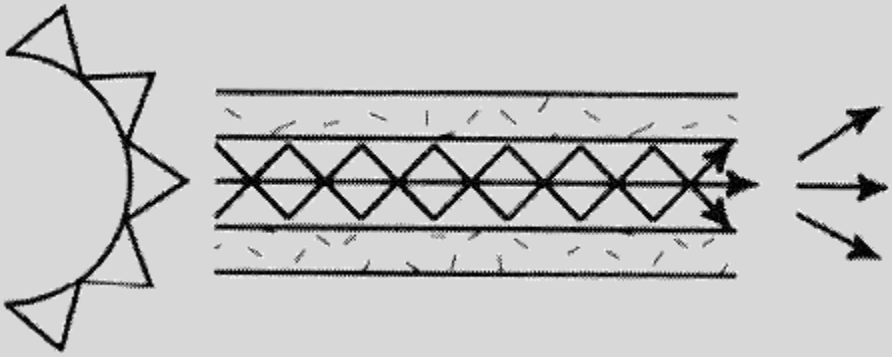
Think of a fiber cable in terms of very long cardboard roll (from the inside roll of paper towel) that is coated with a mirror on the inside.
If you shine a flashlight in one end you can see light come out at the far end - even if it's been bent around a corner.

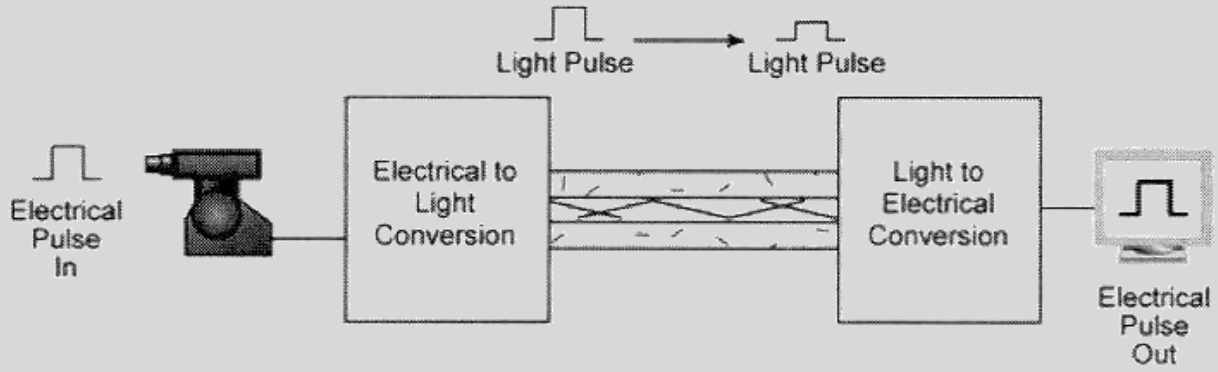
Light pulses move easily down the fiber-optic line because of a principle known as total internal reflection. "This principle of total internal reflection states that when the angle of incidence exceeds a critical value, light cannot get out of the glass; instead, the light bounces back in. When this principle is applied to the construction of the fiber-optic strand, it is possible to transmit information down fiber lines in the form of light pulses.

The core must a very clear and pure material for the light or in most cases near infrared light (850nm, 1300nm and 1500nm). The core can be Plastic (used for very short distances) but most are made from glass. Glass optical fibers are almost always made from puresilica, but some other materials, such as fluorozirconate, fluoroaluminate, and chalcogenide glasses, are used for longer-wavelength infrared applications.

There are three types of fiber optic cable commonly used: single mode, multimode and plastic optical fiber (POF).

Transparent glass or plastic fibers which allow light to be guided from one end to the other with minimal loss.





Fiber optic cable functions as a "light guide," guiding the light introduced at one end of the cable through to the other end. The light source can either be a light-emitting diode (LED)) or a laser.

The light source is pulsed on and off, and a light-sensitive receiver on the other end of the cable converts the pulses back into the digital ones and zeros of the original signal.

Even laser light shining through a fiber optic cable is subject to loss of strength, primarily through dispersion and scattering of the light, within the cable itself. The faster the laser fluctuates, the greater the risk of dispersion. Light strengtheners, called repeaters, may be necessary to refresh the signal in certain applications.

While fiber optic cable itself has become cheaper over time - a equivalent length of copper cable cost less per foot but not in capacity. Fiber optic cable connectors and the equipment needed to install them are still more expensive than their copper counterparts.

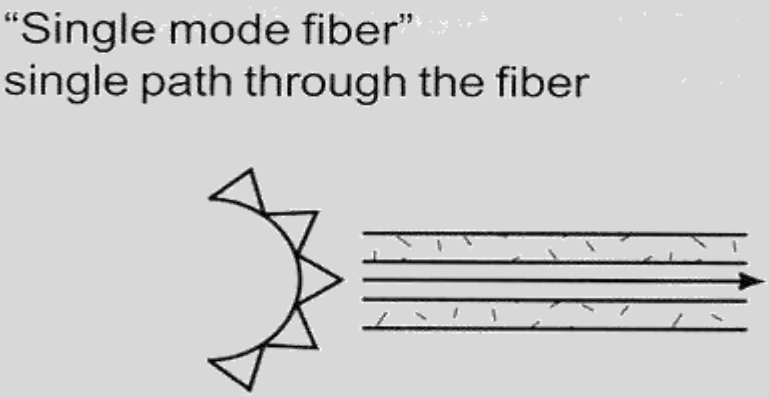
Single Mode cable *is a single stand (most applications use 2 fibers) of glass fiber with a diameter of 8.3 to 10 microns that has one mode of transmission. Single Mode Fiber with a relatively narrow diameter, through which only one mode will propagate typically 1310 or 1550nm.*

Carries higher bandwidth than multimode fiber, but requires a light source with a narrow spectral width. Synonyms mono-mode optical fiber, single-mode fiber, single-mode optical waveguide, uni-mode fiber.

Single Modem fiber is used in many applications where data is sent at multi-frequency (WDM Wave-Division-Multiplexing) so only one cable is needed - (single-mode on one single fiber)Single-mode fiber gives you a higher transmission rate and up to 50 times more distance than multimode, but it also costs more.

Single-mode fiber has a much smaller core than multimode. The small core and single light-wave virtually eliminate any distortion that could result from overlapping light pulses, providing the least signal attenuation and the highest transmission speeds of any fiber cable type.

Single-mode optical fiber is an optical fiber in which only the lowest order bound mode can propagate at the wavelength of interest typically 1300 to 1320nm.

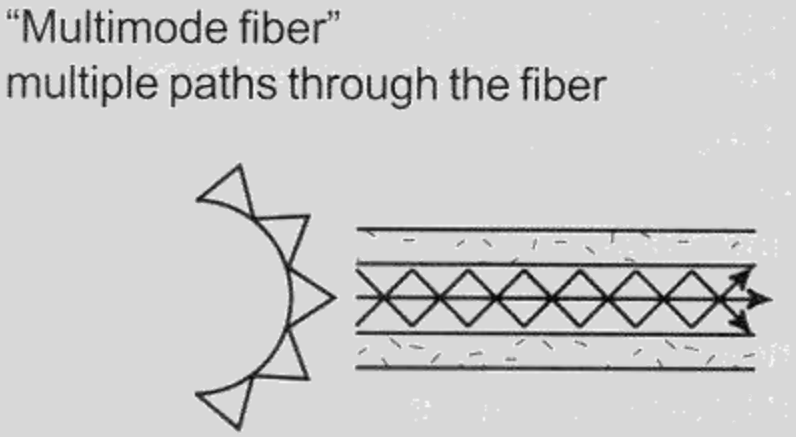


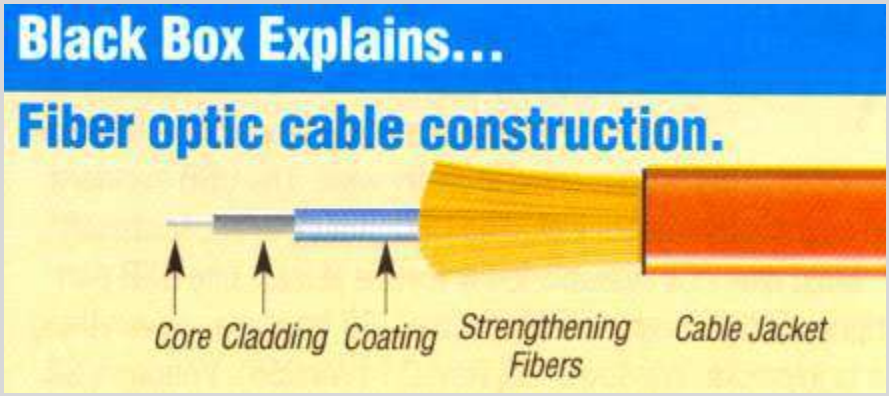
jump to single mode fiber page

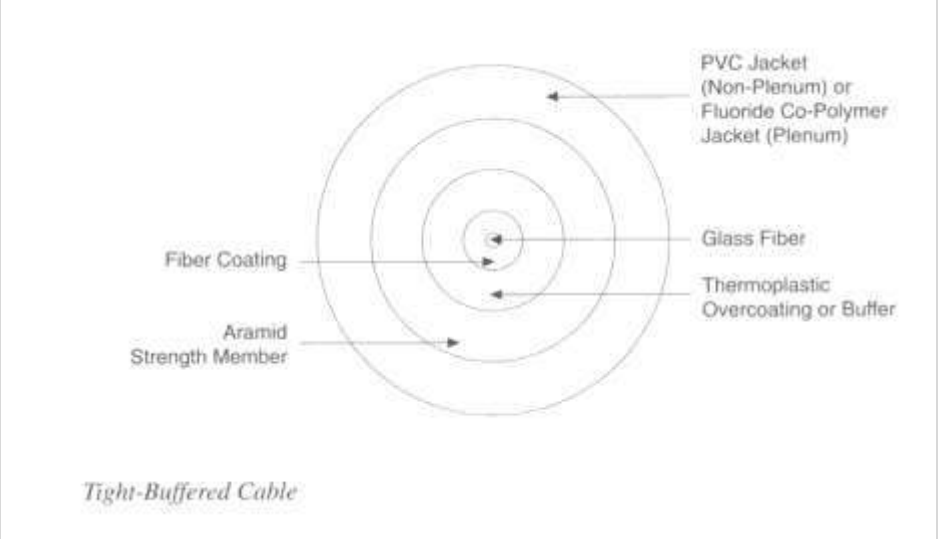
designers Multi-Mode cable has a little bit bigger diameter, with a common diameters in the 50-to-100 micron range for the light carry component (in the US the most common size is 62.5um). Most applications in which Multi-mode fiber is used, 2 fibers are used (WDM is not normally used on multi-mode fiber).

POF is a newer plastic-based cable which promises performance similar to glass cable on very short runs, but at a lower cost.

Multimode fiber gives you high bandwidth at high speeds (10 to 100MBS - Gigabit to 275m to 2km) over medium distances. Light waves are dispersed into numerous paths, or modes, as they travel through the cable's core typically 850 or 1300nm. Typical multimode fiber core diameters are 50, 62.5, and 100 micrometers. However, in long cable runs (greater than 3000 feet [914.4 meters), multiple paths of light can cause signal distortion at the receiving end, resulting in an unclear and incomplete data transmission so now call for single mode fiber in new applications using Gigabit and beyond.







Tight-Buffered Cable

The use of fiber-optics was generally not available until 1970 when Corning Glass Works was able to produce a fiber with a loss of 20 dB/km. It was recognized that optical fiber would be feasible for telecommunication transmission only if glass could be developed so pure that attenuation would be 20dB/km or less.

That is, 1% of the light would remain after traveling 1 km. Today's optical fiber attenuation ranges from 0.5dB/km to 1000dB/km depending on the optical fiber used. Attenuation limits are based on intended application.

The applications of optical fiber communications have increased at a rapid rate, since the first commercial installation of a fiber-optic system in 1977. Telephone companies began early on, replacing their old copper wire systems with optical fiber lines. Today's telephone companies use optical fiber throughout their system as the backbone architecture and as the long-distance connection between city phone systems.

Cable television companies have also began integrating fiber-optics into their cable systems. The trunk lines that connect central offices have generally been replaced with optical fiber. Some providers have begun experimenting with fiber to the curb using a fiber/coaxial hybrid.

Such a hybrid allows for the integration of fiber and coaxial at a neighborhood location. This location, called a node, would provide the optical receiver that converts the light impulses back to electronic signals. The signals could then be fed to individual homes via coaxial cable.

Local Area Networks (LAN) is a collective group of computers, or computer systems, connected to each other allowing for shared program software or data bases. Colleges, universities, office buildings, and industrial plants, just to name a few, all make use of optical fiber within their LAN systems.

Cloud computing

D.Tamilselvan

(ASSISTANT PROFESSOR/EEE)

What Is Cloud Computing?

Cloud computing is the delivery of different services through the Internet. These resources include tools and applications like data storage, servers, databases, networking, and software.

Rather than keeping files on a proprietary hard drive or local storage device, cloud-based storage makes it possible to save them to a remote database. As long as an electronic device has access to the web, it has access to the data and the software programs to run it.

Cloud computing is a popular option for people and businesses for a number of reasons including cost savings, increased productivity, speed and efficiency, performance, and security.

Understanding Cloud Computing

Cloud computing is named as such because the information being accessed is found remotely in the cloud or a virtual space. Companies that provide cloud services enable users to store files and applications on remote servers and then access all the data via the Internet. This means the user is not required to be in a specific place to gain access to it, allowing the user to work remotely.

Cloud computing takes all the heavy lifting involved in crunching and processing data away from the device you carry around or sit and work at. It also moves all of that work to huge computer clusters far away in cyberspace. The Internet becomes the cloud, and voilà—your data, work, and applications are available from any device with which you can connect to the Internet, anywhere in the world.

Types of Cloud Services

Regardless of the kind of service, cloud computing services provide users with a series of functions including:

- *Email*
- *Storage, backup, and data retrieval*
- *Creating and testing apps*
- *Analyzing data*
- *Audio and video streaming*
- *Delivering software on demand*

Cloud computing is still a fairly new service but is being used by a number of different organizations from big corporations to small businesses, nonprofits to government agencies, and even individual consumers.

Deployment Models

There are various types of clouds, each of which is different from the other. Public clouds provide their services on servers and storage on the Internet. These are operated by third-party companies, who handle and control all the hardware, software, and the general infrastructure. Clients access services through accounts that can be accessed by just about anyone.

Private clouds are reserved for specific clientele, usually one business or organization. The firm's data service center may host the cloud computing service. Many private cloud computing services are provided on a private network.

Hybrid clouds are, as the name implies, a combination of both public and private services. This type of model allows the user more flexibility and helps optimize the user's infrastructure and security.

Types of Cloud Computing

Cloud computing is not a single piece of technology like a microchip or a cellphone. Rather, it's a system primarily comprised of three services: software-as-a-service (SaaS), infrastructure-as-a-service (IaaS), and platform-as-a-service (PaaS).

1. *Software-as-a-service (SaaS) involves the licensure of a software application to customers. Licenses are typically provided through a pay-as-you-go model or on-demand. This type of system can be found in Microsoft Office's 365.*
2. *Infrastructure-as-a-service (IaaS) involves a method for delivering everything from operating systems to servers and storage through IP-based connectivity as part of an on-demand service. Clients can avoid the need to purchase software or servers, and instead procure these resources in an outsourced, on-demand service. Popular examples of the IaaS system include IBM Cloud and Microsoft Azure.*
3. *Platform-as-a-service (PaaS) is considered the most complex of the three layers of cloud-based computing. PaaS shares some similarities with SaaS, the primary difference being that instead of delivering software online, it is actually a platform for creating software that is delivered via the Internet. This model includes platforms like Force.com and Heroku.*

Advantages of Cloud Computing

Cloud-based software offers companies from all sectors a number of benefits, including the ability to use software from any device either via a native app or a browser. As a result, users can carry their files and settings over to other devices in a completely seamless manner.

Cloud computing is far more than just accessing files on multiple devices. Thanks to cloud computing services, users can check their email on any computer and even store files using services such as Dropbox and Google Drive. Cloud computing services also make it possible for users to back up their music, files, and photos, ensuring those files are immediately available in the event of a hard drive crash.

It also offers big businesses huge cost-saving potential. Before the cloud became a viable alternative, companies were required to purchase, construct, and maintain costly information management technology and infrastructure. Companies can swap costly server centers and IT departments for fast Internet connections, where employees interact with the cloud online to complete their tasks.

Disadvantages of the Cloud

With all of the speed, efficiencies, and innovations that come with cloud computing, there are, naturally, risks.

Security has always been a big concern with the cloud especially when it comes to sensitive medical records and financial information. While regulations force cloud computing services to shore up their security and compliance measures, it remains an ongoing issue. Servers maintained by cloud computing companies may fall victim to natural disasters, internal bugs, and power outages, too. The geographical reach of cloud computing cuts both ways: A blackout in California could paralyze users in New York, and a firm in Texas could lose its data if something causes its Maine-based provider to crash. As with any technology, there is a learning curve for both employees and managers. But with many individuals accessing and manipulating information through a single portal, inadvertent mistakes can transfer across an entire system.

Bomb Detection Robotics Using Embedded Controller

G.Gurumoorthy

(ASSISTANT PROFESSOR/EEE)

Introduction:

A simulation game is composed of three main elements: scenery, one or more characters and some rules. The characters can be real or fictional. A micro controller is an integrated circuit composed of a CPU,various peripheral devices, and typically memory, all in niches. Using one chip that contains all the necessary functions in place of a microprocessor and multiple peripheral chips has reduced the size and the power consumption of control oriented applications. For avoiding this types of problem in the nuclear power plant. The additional features of this project are that the robot is controlled by web server.

II. ARCHITECTURE AT ROBOTIC SIDE:

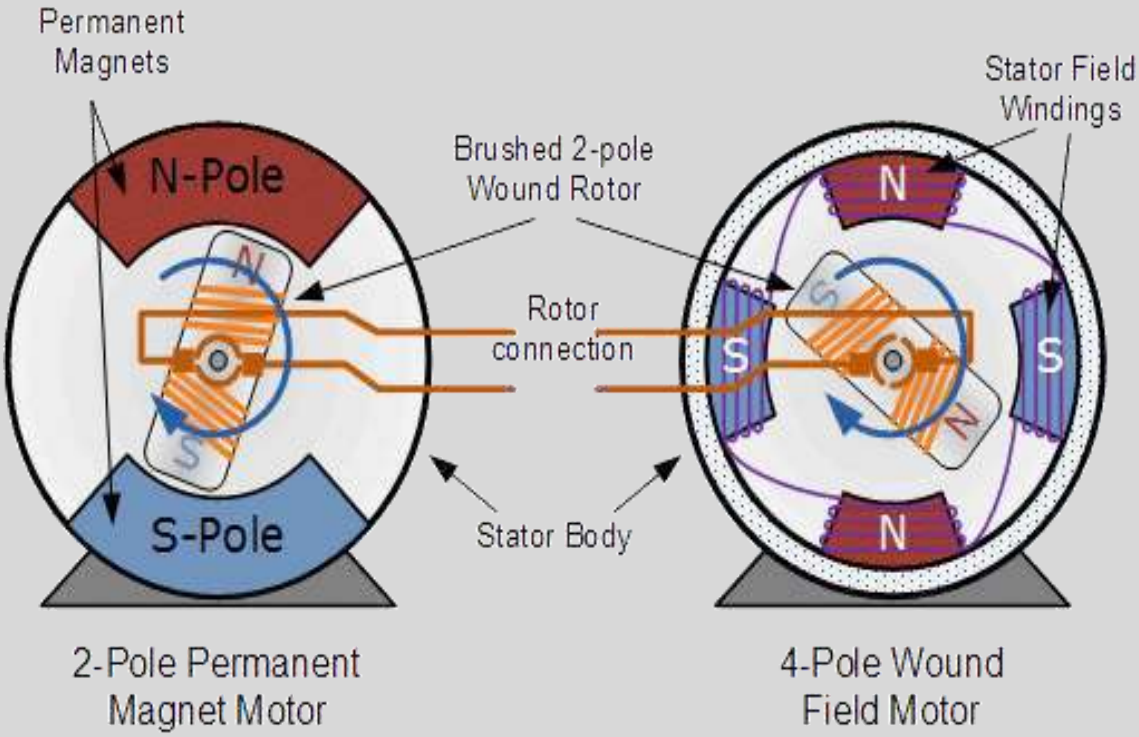
The proposed design is illustrated in this section. It also gives the complete details about the interfaced devices to implement this project. It consists of analog to digital converters, multiplexers, potentiometers, metal detector and cell phone jammer. Position and orientation of hand is obtained by two main parts; data glove and sensor arm cover. Data glove consists of 5 potentiometer as shown in Figure3. Bend of the five fingers can be measured by potentiometer. Bomb detector is just act as metal detector which detected any metal in the required areas. Because the bombs made with metals. The bomb detector is attached in the topside with an antenna. Robot movements are controlled remotel.

III. Basic System Model:

Radio frequency (RF) is a rate of oscillation in the range of about 3 kHz to 300 GHz, which corresponds to the frequency of radio waves, and the alternating currents which carry radio signals. RF

IV.Multiplexer:

The device contains an 8-channel single-ended analog signal multiplexer. A particular input channel is selected by using the address decoder. The address is latched into the decoder on the lowto-high transition of the address latch enable signal. V. Digital potentiometers Design: A digital potentiometer is built either from a resistor ladder integrated circuit or a digital-toanalog converter although a resistor ladder construction is the more common. Every step on the resistor ladder has its own switch which can connect this step to the output terminal of the potentiometer. The selected step on the ladder determines the resistance ratio of the digital potentiometer. The number of steps is normally indicated with a bit value e.g. 8 bits equals 256 steps; 8 bits is the most common, but resolutions between 5 and10 bits (32 to 1024 steps) are available.



VI.Limitations:

While quite similar to normal potentiometers, digital potentiometers are constrained by current limit in the range of tens of mill amperes. Also, most digital potentiometers limit the input voltage range to the digital supply range (0–5 VDC), so additional circuitry is required to replace conventional potentiometer. Further, instead of the seemingly continuous control that can be obtained from a multiturn resistive potentiometer, digital potentiometers have discrete steps in résistance .

VII. User interface:

The user can interact with the simulation through the mouse and the keyboard. The former controls the camera, while the latter commands the robot and some parameters of the simulation. A keyboard handler class of OSG manages the keyboard. At each time step, the keyboard handler class checks for a key press.

VIII. DC Motor:

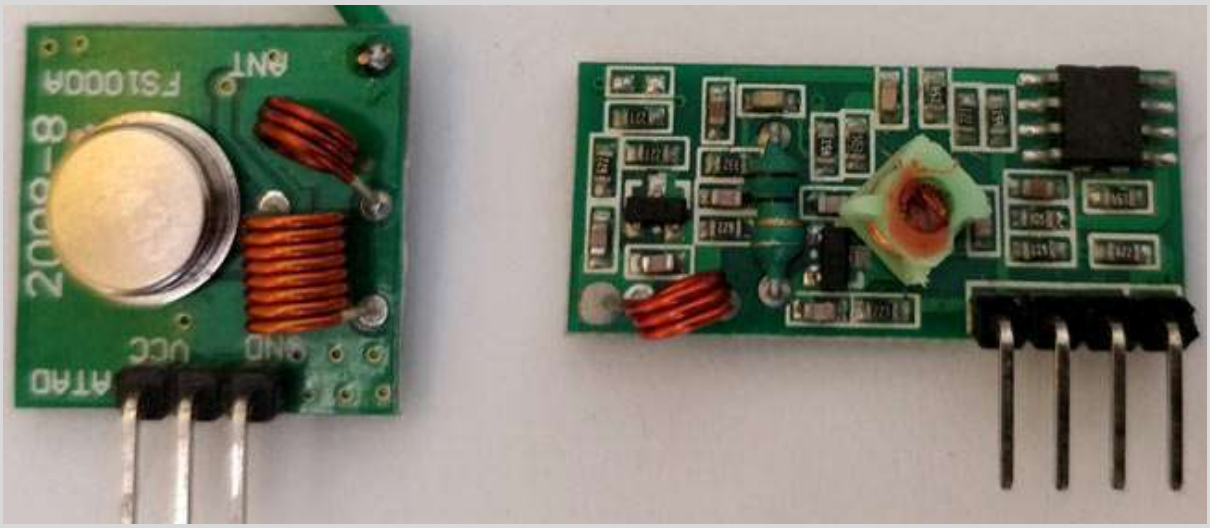
DC motors are configured in many types and sizes, including brush less, servo, and gear motor types. A motor consists of a rotor and a permanent magnetic field stator. The magnetic field is maintained using either permanent magnets or electromagnetic windings. DC motors are most commonly used in variable speed and torque.

IX.Metal Detector:

Usually the device gives some indication of distance; the closer the metal is, the higher the tone in the earphone or the higher the needle goes. The simplest form of a metal detector consists of an oscillator producing an alternating current that passes through a coil producing an alternating magnetic field. If a piece of electrically conductive metal is close to the coil, eddy currents will be induced in the metal, and this produces a magnetic field of its own. If another coil is used to measure the magnetic field (acting as a magnetometer), the change in the magnetic field

X. RF Transmitter:

Transmission through RF is better than IR (infrared) because of many reasons. Firstly, signals through RF can travel through larger distances making it suitable for long range applications. Also, while IR mostly operates in line-of-sight mode, RF signals can travel even when there is an obstruction between transmitter & receiver. Next, RF transmission is more strong and reliable than IR transmission. RF communication uses a specific frequency unlike IR signals which are affected by other IR



Technical Symposium:

The department of Electrical and Electronics Engineering organized and conducted a National Level Technical Symposium (E3SPARTA'19) on 23rd February 2019. Guest speaker and Jury for paper presentation Dr.H.Habeebullah Sait, AP, Dr.P.Vijayarajan AP, Department of Electrical and Electronics Engineering, University College of Engineering, BIT Campus, Anna University, Tiruchirappalli- 620024 delivered the key note address. Various events were conducted for exhibiting the technical skills of the participants from various colleges across the state. Dr.H.Habeebullah Sait selects the winners and distributes the prizes to winners.

Inauguration of IETE Student Forum (ISF):

Department of ECE & EEE at M.I.E.T Engineering College have jointly inaugurated IETE Students' Forum (ISF) with 119 student members on 27th March 2019.Guest of Honor Mr.C.V.Vinod, Principal General Manager BSNL, and Trichy delivered a special talk on the topic "5G" and few easily adoptable tips for students to manage all the psychological related stresses.

Project-Expo:

The department of Electrical and Electronics Engineering organized and conducted a Project Expo for Diploma students on 23rd February 2019.

International Seminar:

The department of Electrical and Electronics Engineering organized and conducted a One day International seminar "DRIVE THE FUTURE WITH BIOSENSOR & BIOELECTRONIC"on 8thMarch 2019. Guestspeaker Prof Y.Takemura Faculty of Engineering, Division of Intelligent systems engineering in Yokohama National University, Japan and Dr. V.R.Sarma Dhulipala, Assistant Professor Department of physics, Anna University, BIT campus, Tiruchirappalli has delivered the key note address.

Conference / Paper Presentation / Workshop / Events attended by Students:

- *S.Shahana begam from final year EEE has Won Ist Prize in the event "Paper Presentation" in the National level Technical Symposium, Chenduran college of Engineering Pudukkottai on 15th February 2019.*
- *Mohamed Thagir.Mfrom final year EEE has Won IInd Prize in the Paper presentation in the National level Technical Symposium organized by Department of Electrical and Electronics Engineering, Chenduran College of Engineering, Pudukkotai on 15th February 2018.*
- *B.Sheik Ismail &Ganesh kumar.J from third year EEE has participated in the event "Tech Hunt" and won Second prize in the National level Technical Symposium, Chenduran College of engineering, Pudukkottai on 15th February 2019.*
- *J.Kiruthika & D.Nancy from third year EEE has participated in the event "Paper presentation" and won first prize in the National level Technical Symposium, Indira Ganesan College of engineering, Trichy on Ist March 2019.*
- *R.Pradeep & N.Ramkavi from third year EEE has participated in the event "Connectricals" and won Second prize in the National level Technical Symposium, Indira Ganesan college of engineering,Trichyon Ist March 2019.*
- *J.Kiruthika& D.Nancy from third year EEE has participated in the event "Paper Presentation" and won third prize in the National level Technical Symposium, M.A.R College of engineering, Pudukkottai on 8th March 2019.*
- *V.Arul sakthi &N.Ram kavi from Third year EEE has participated in the event "Connectricals" and won First prize in the National level Technical Symposium, M.A.R College of Engineering on 8th March 2019.*

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MOHAMED INSTITUTE OF EDUCATION &TECHNOLOGY
TRICHY-PUDUKKOTTAI ROAD,TIRUCHIRAPPALLI-7
CONTACT:0431-2660 303 & 302
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