





CHAIRMAN: Er. N. KUMARESAN, FIE

HON. SECRETARY: Er. A. ANAND, MIE

IEI – TIC – NEWS COMVEYS GREETINGS 70 ALL FELLOW ENGTNEERS









From the Chairman's Desk...

Dear Fellow Engineers,

Myself and Er. Anand, have attended "an interactive session arranged for the newly elected Chairmen and Honorary Secretaries of the State and Local Centre's (Sessions 2018-20) of IEI" on 24 February 2019 (Sunday) at Engineering Staff College of India (ESCI), Hyderabad. The aim of the session is to familiarize the newly elected Chairmen and Honorary Secretaries with modalities of various administrative and financial matters related to the Centres and the Institution as a whole. The meeting was witnessed by all the Chairmen and Honorary Secretaries of IEI across the country. It was very useful in getting to know the activities carried out by various centres and networking opportunities. Er. T.M. Gunaraja, FIE, President, IEI also addressed the gathering with a valuable input for taking up the institution to the next level.

The IEI, Tiruchirappalli Local Center (TLC), is set to recognize Young Women Engineer for their contribution towards Engineering & Technology as part of the International Women's Day Celebrations. This is the first of its kind introduced by IEI TLC. In this regard, centre received overwhelming response from the Young Women Engineers and I wish to convey my gratitude for all those who have submitted the nominations.

I am happy to inform through this Newsletter that the information brochure for the 34th National Convention on Production Engineers 2019 and National Seminar (NCPE 2019) has been released for circulation. This mega event is going to be held at NIT, Tiruchirappalli during 25-26, May 2019. Many industry experts, academicians, practicing engineers, researchers and consultants are expected to participate in this event to share their experiences. Hence we at IEI TLC organizing committee request the fellow engineers to kindly support the event by sponsoring, sending papers and also by other means for making NCPE 2019 a grand success.

I congratulate IEI Madurai Local Centre for getting Best Local Centre Award for the year 2017-2018 at 33rd Indian Engineering Congress held at Udaipur in Dec 2018.

I request my team members to focus and devise the methods for improving the corporate membership of our centre region. This is apart from establishing Students' Chapters and bring out the institutional membership. Further, I request all the members to suggest the "recent trends and emerging topics" for arranging seminars along with resource persons who can share their latest expertise in their field of Engineering, with us.

I appreciate the untiring efforts of the members of the editorial board for shaping this Newsletter in a professional way and timely manner. It provides a wide coverage of all the activities of our centre. Let us aim to reach further heights with collective efforts and also to bring many honors to IEI TLC.

Thank you one and all,

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Dr. N Kumaresan Chairman



Hon. Secretary's desk.....



Dear Friends,

A Warm Greetings from IEI Tiruchirappalli Local Centre.

We are in the month of March. It is the first month of spring in Asia and India. It is most lovable season of the four sessions. Spring brings green growth back to plants and trees. I hope in same way that all our problems and issues will be sorted out during the month of march.

In March, we have planned to conduct two special programs. One is Celebration of International Women's Day (Friday 08th March) and World Water Day (Friday 22nd March).

All India Workshop on "Design of Micro Grid and Grid Integration Issues of Distributed Generation" has been organized by IEI Tiruchirappalli Local centre at Saranathan College of Engineering on March 6-7, 2019. I request all members to attend above events and gain insights.

Procurement action has been initiated for purchasing books for our new library building. In this time, we planned to purchase Section B Study materials and Reference Books for different Engineering disciplines. So I request members to give their suggestions for book purchase.

With Warm Regards,

(A.Anand)











- ✓ IEI-TLC All India Workshop Details
- ✓ IEI-TLC National Seminar Details
- ✓ Recent Technical Lectures
- ✓ Notification for R&D Grant In Aid



IEI, TLC organizes All India Workshop on

"Design of Micro Grid and Grid Integration Issues of Distributed Generation"

It is our great pleasure to inform you that an All India Workshop on "Design of Micro Grid and Grid Integration Issues of Distributed Generation" is being organized by our Tiruchirapalli Local Centre under the aegis of Electrical Engineering Division during March 06 - 07, 2019 at Tiruchirapalli.

We request you to please make it convenient to attend the programme to make it a grand success and also extend your valuable support and contribution by way of your presence, presenting papers, deputing delegates and the way you would like to do and also provide wide publicity to the aforesaid programme by sharing this invitation among your colleagues & friends for their participation for mutual benefit to the fraternity.

For further details, you may contact:

Hony. Secretary,

The Institution of Engineers (India), Tiruchirapalli Local Centre

BHEL Main Office Road,

Tiruchirapalli 620 014

Phone: 0431- 2554285

Email: tiruchirapallilc@ieindia.org

ieitlc1973@gmail.com



IEI, TLC organizes National Seminar on

"Emerging Technologies in Power Sector Equipments Manufacturing"

It is our great pleasure to inform you that 34th National Convention on Production Engineers 2019 and National Seminar (NCPE 2019) on **"Emerging Technologies in Power Sector Equipments Manufacturing"** is being organized by our **Tiruchirapalli Local Centre** under the aegis of Production Engineering Division during **May 25 - 26, 2019 at National Institute of Technology, Tiruchirapalli**.

Many industry experts, academicians, practicing engineers, researchers and consultants are expected to participate in this event to share their experiences. We request you to please make it convenient to attend the programme to make it a grand success and also extend your valuable support and contribution by way of your presence, presenting papers, deputing delegates and the way you would like to do and also provide wide publicity to the aforesaid programme by sharing this invitation among your colleagues & friends for their participation for mutual benefit to the fraternity. The information brochure is also circulated along with this newsletter.

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Phone: 0431- 2554285

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ieitlc1973@gmail.com





RECENT TECHNICAL LECTURES

Name of Centre / Overseas Chapter:	TIRUCHIRAPPALLI LOCAL CENTRE
Title of Activity:	Software Licensing
Activity under Divisional Board	Computer Engineering Division
Date: 18-12-18	Venue: IEI TLC Institution Building
Contraction of Contractions and Contract	
The Speaker Er. C T. Praveen Kumar Assistant Engineer, Digital Transformation Group, Bharat Heavy Electricals Ltd.Tiruchirappalli-14 is presenting on the Topic through Power Point slides to the participants.	Er J. Sankaran FIE, Past Chairman, Former General Manager, BHEL Tiruchirappalli-14 is presenting Gift to the speaker in the presence of Er S.Lakshmanan immediate past Secretary of IEI TLC.

Software Licensing

A software license is a legal agreement between the producer of a software and its end user on the terms and conditions under which the latter is supposed to use the software. While this definition by itself may not mean much to most of the end users of a software, the complications arising out of the use (or misuse) of software often leads one to critically understand the terms and conditions mentioned in the license. As with any legal document, software license should be thoroughly read and understood – something that most people would normally not do. End users are normally concerned with the monetary aspect of the software, i.e. whether one has to pay to buy and use a software or not. Quite often, users don't quite understand the specific rights associated with 'using' the software. It is quite important to understand that *using* a software is not just limited to installing the software on one's computer, it also covers a host of other factors and related conditions like rights for distribution of the software, ability to study and change the code of the software thereby affecting its functioning, store the software in certain devices for repeated use, rights to resell etc.



Terminologies associated with software license can often be quite confusing; for example, it is quite common for users to erroneously believe that the term *free* means *free of charge*. Unless stated as *free of charge*, the term *free* in free software refers to the *free*dom to use the software in whichever way the user wishes to and has no conditions stipulated on the cost of buying and using the software. The usage refers to, among other things, the ability to study and modify the source code of the program and redistribute it.

The widespread availability of free and open source software has completely changed the software licensing landscape. There is a multitude of software licensing models to choose from, with each one of them having its own terms and conditions. These not only add to the complexity that surrounds software licensing, but also implies that end users be fully aware of all their rights (dos and don'ts) while they agree to any software license. The ever expanding ocean of open source software has resulted in a significant change in the way software is being developed these days. Collaborative software development, modifications and improvisation of existing software, redistribution of free and open source software as proprietary ones after repackaging etc. are the norms of today. Such scenario presents an unprecedented level of involvement of people across geographical locations for software development. This also means that developers have a clear cut understanding of how their efforts would be rewarded and how the creators of the inputs used for such software development would benefit from other people using the fruits of their efforts. It is to be noted that unless stated otherwise by the creator of the software, all software are copyright of their respective creators.

Corporations who are into buying software in bulk need to understand the specific details of the license of the software which they intend to use. It is worthwhile to note that the monetary aspect of paying for use of software may not always be limited to the initial one-time payment. Certain software licenses may spell out subsequent payments to be made for troubleshooting, upgrade, migrations to higher versions, per user cost etc. Such knowledge of the license can help organisations use these precious resources more judiciously while avoiding costly and image damaging legal litigations arising from violation of software license agreement.

There aren't many software licenses that are short and easily comprehensible. The factor of complexity that comes with software licensing should not deter end users from reading and reading between the lines, the end user license agreement (EULA) or the software license in general to fully understand its import. A general idea on how to use the software, as guided by the common sense of the user may be just sufficient in most of the cases. Such an understanding, however, may not always be sufficient if the user wishes to do more with the software than just installing it on his/her computer.



Name of Cen	tre / Overseas Chapter:	TIRUCHIRAPP	ALLI LOCAL CENTRE
Title of Activi	ity:	Electromagnet	tic interference from solar cells
Activity unde	er Divisional Board	Electrical Engi	neering Division
Date:	26-12-18	Venue:	IEI TLC Institution Building
	Che "Institution di Engliteers (Jube) TRUCHIRAPP ALLI LOCAL CENTRE LECTROMAGNETIC INTERPERENAS (ROM SOLAR TO CLIS)		
The Sr Depart Engine	beaker Dr. K. Rajkumar Professor, EEE tment, Saranathan College of Pering, Panjappur, Tiruchirappalli-12 is	Er K.Rai Memen A.Anano	madoss Former GM/BHEL is presenting to to the speaker in the presence of d, Hon. Secretary/IEI-TLC
preser Point s	ting on the Topic through Power lides to the participants		

Due to rapid depletion of fossil fuels, the increase in electrical energy demand forces the world to seek alternate energy sources to generate electricity. In addition, spreading of awareness in environmental issues also incline the attraction towards the usage of renewable energy sources. In this context, solar photovoltaic (PV) energy conversion is the promising one which can easily be installed from smaller power rating to very large scale power generating system. The PV systems can be operated as a stand-alone system or as a grid connected system. Generally, the grid connected PV systems comprises of PV generator (PV module), DC-DC boost converter with integrated maximum power point tracker (MPPT) and the grid integrated DC-AC inverter to supply the current to utility grid. The operation of DC-DC boost converter produces noise at its switching frequencies and its harmonic frequencies. This generated noise flows into the PV panel side has the chance of radiation as electromagnetic energy.



The radiated noise adversely affects the sensitive electronic equipment's and communication systems located in the vicinity of the PV system. The radiated noises thus recorded are ranging from few tens of kHz to several hundreds of MHz during the operation of PV systems. The parameters which are mainly deciding the radiated emissions are DC cable and its length, frame wire of PV panels, capacitance between the panel and earth, number of PV panels used and the switching frequency of converters. It is important to note that the capacitance between the panel and the earth is determined by the size of the panel, height of installation and the relative humidity. The increase in number of panels shifts the peak of noise level into lower frequency range. The important standards cover the electromagnetic interferences (EMI) and electromagnetic compatibility (EMC) are CISPR (International Special Committee on Radio Interference), FCC (Federal Communications Commission), IEC (International Electrotechnical Commission), VDE (Verband Deutscher Elektrotechnik), ETSI (European Telecommunications Standards Institute), and ANSI (American National Standards Institute). The regulations classify the devices under test in to Class A (Used in commercial and industrial environments) and Class B (Used in residential environment). The standards specify the allowable emission levels in the respective environments. Various researches recommend reduction of EMI at source, along the path and at the receptor. It found that the EMI reduction at the source level is effective and cheap. In recent years, different switching strategies are under research to provide minimum noise during power conversion. Additionally, the double end grounded shielding of DC cables can also minimize the radiation.







Non Destructive Testing

Non Destructive testing(NDT) is a series of tests used to evaluate or analyze a component or group of components for their integrity without causing damage to the component. NDT is carried out at various stages in the life of the component to assess the soundness of the component. NDT in industry helps assure not only the service life of the components, but also the safety of the operating personnel and environment.

NDT in power industry:

NDT becomes crucial in evaluating components in power equipment manufacturing industries. Components in power industry can be classified as pipes, tubes, shells, valves etc. There are more than 10 NDT methods which are applied in power boiler manufacturing industries out of which four of them are more common. NDT in boiler industry can be classified as surface, sub-surface inspection and volumetric inspection. Dye penetrant testing (DPT) is a surface inspection technique which is used to detect flaws which are open to surface of the component. There has been numerous innovations in DPT due to increasing demand for quality products in power and auto sector.

Magnetic particle testing (MPT) is employed to detect surface and sub-surface discontinuities in welds and forgings which can be magnetized. MPT can be broadly categorized into longitudinal and circular magnetization methods based on the type of magnetization carried out.

Radiography is a very popular volumetric NDT method giving visual perception of flaws. Radiography is carried out in controlled environment as misuse of ionizing radiation can cause harm to the personnel in the vicinity. Usage of image acquiring and processing software has enabled automation in this field and increased productivity by leaps and bounds.

Ultrasonic testing uses ultrasound having higher frequency to detect a variety of flaws in welds, forgings, castings etc. Besides NDT, it can also be used for thickness measurements. Advances in ultrasound technology has led to rise of Phased Array Ultrasonic testing and Time of flight diffraction technique which has a higher probability of detection of flaws.

All the above methods are complementary and is required to be carried out in a sequential manner to ensure that components are free of defects.



Name of Ce	ntre / Overseas Chapter:	TIRUCHI	RAPPALLI LOCAL CENTRE		
Title of Activity:		Advance	Advanced Concepts in Image Processing		
Activity und	ler Divisional Board	Comput	er Engineering Division		
Date:	08-01-19	Venue:	IEI TLC Institution Building		
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The S Profes Mook Keera Topic partic	peaker Er. Y. Suganya, Assistant ssor, Department of CSE, ambigai College of Engineering, nur, Pudukkottai presenting on the through Power Point slides to the ipants	Er M Tir M pr Ch Im	K. Ramadass , Former General anager, Bharat Heavy Electricals Ltd. Fuchirappalli-14 is presenting emento to the speaker in the esence of Dr. N. Kumaresan mairman IEI/TLC and Er R. Selvaraj mediate past Chairman IEI/TLC.		

Advanced Concepts in Image Processing

In computer science, digital image processing is the use of computer algorithms to perform image processing on digital images. As a subcategory or field of digital signal processing, digital image processing has many advantages over analog image processing. It allows a much wider range of algorithms to be applied to the input data and can avoid problems such as the build-up of noise and signal distortion during processing.

Elements of Image Processing:

Image sensors / Acquisition

OCharge coupled device

- oSensors
- ➤Storage
- ➢Display
- ►IP Hardware
- ➢IP Software



Image Processing

Signal Processing
Input – Photograph or Video Frames
Output - image
Digital Image Processing
Use of computer algorithms to perform various operations on digital images

Goals of image processing

- Image improvement
 - Improving the visual appearance of images to a human viewer
- •Image analysis
 - Preparing images for measurement of the features and structures present

Image Compression

Aim

- Savings in storage
- Reduction in transmission cost

Data redundancy

- Coding redundancy
- Interpixel redundancy
- Psychovisual redundancy

Compression Type

- Lossless compression
- Lossy compression

Imagining Modalities

- Radiography (X-Ray)
- Fluoroscopy (guided procedures) -Diagnostic / Interventional imaging
- Computed Tomography (CT)
- Ultrasound (US)
- Gray-Scale /Color Doppler
- Magnetic Resonance Imaging (MRI)
- Nuclear Medicine



Name of Centre / Overseas Chapter:		TIRUCHIRAPPALLI LOCAL CENTRE		
Title of Ac	tivity:	Application of Multilevel Inverters in Smart Grid		
Activity ur	der Divisional Board	Electrical Engineering Division		
Date:	17-01-19	Venue: IEI TLC Institution Building		
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The S Ibral Depa Colle Cam Pres Pow parti	Speaker Er. S.A. Ahamed nim Research Scholar artment of EEE University ege of Engineering BIT pus Anna University . enting on the Topic through er Point slides to the icipants	Dr.S.Dha Manage Ltd.Tiruc the spea Secretar	armalingam FIE , Former General r, Bharat Heavy Electricals chirappalli-14 is presenting Memento to ker in the presence of Er.A.Anand Hon. y of IEI TLC	

Application of Multilevel Inverter in Smart Grid

Increasing energy consumption, rising public awareness of environmental protection, and steady progress in power deregulation have attracted increased interest in alternative power generation such as photo voltaic, fuel cell and wind energy system. Photo Voltaic (PV) power generations is one of the most promising Renewable Energy (RE) technologies with clean and efficient DC output power. The power electronics converter is employed in Energy Conversion System (ECS) as AC to DC or DC to AC power. The conventional two level voltage source inverters (VSI) convert fixed DC voltage to variable AC voltage, frequency which contains obnoxious lower order harmonics at fundamental switching frequency. The Multilevel Inverter (MLI) has emerged recently as important alternative in the area of high-power medium-voltage range for adjustable speed



drives (ASD), FACTS devices, marine propulsion, high-voltage direct-current (HVDC) transmission, railway traction, marine propulsion, grid operation and also enables the easy interfacing the RE sources.

The ability of establishing near sinusoidal (staircase) waveform from the input sources options of isolated DC sources, capacitor banks, renewable energy sources etc., has propped the MLIs for high power applications. The classical MLI topologies are named as Neutral Point Clamped (NPC), Flying Capacitor (FC) and Cascaded H-Bridge (CHB). The NPC and FC MLIs utilize a single dc source and the bulk capacitor banks for different DC input voltage level generation. Synthesizing of the output voltage is performed through clamping diodes and flying capacitors respectively in NPC and FC MLIs. In converse, the CHB consists of series connection of H-bridge inverters (each with an isolated DC source) to produce stepped output voltage with desired amplitude and frequency. However, these topologies have increased cost and control intricacy due to extra power components with dissimilar blocking voltages and increased number of levels.

In recent decades, many topologies are addressed to develop the performance of multilevel converters for low total harmonic distortion (THD), electromagnetic interference (EMI), common mode voltage (CMV), switching loss, and high power quality, reliability, efficiency with effective control and fast modulation methods. These merits attract the researchers to employ the multilevel inverters in the wide application of smart grid technology. Moreover, consuming one's own solar production directly, storing in batteries for later use or in case of power cuts, and also injecting to - or consuming from - the grid only when needed, is now all possible with intelligent controller in the multilevel inverter.



Name of Ce	ntre / Overseas Chapter:	TIRUCHIRAP	PALLI LOCAL CENTRE
Title of Acti	vity:	Six sigma for	r industry and life
Activity und	ler Divisional Board	Production E	ingineering
Date:	22-01-19	Venue:	IEI TLC Institution Building
	The Turner		



The Speaker Bellana Sankara Rao, Senior Engineer, Quality control, BHEL, Tiruchirappalli-14 is presenting on the Topic through Power Point slides to the participants. K.Ramadoss Former GM/BHEL is presenting Memento to the speaker in the presence of Dr Kevin Ark Kumar, Joint Secretary/IEI TLC

Six sigma Introduction

Six Sigma is a disciplined, statistical-based, data-driven approach and continuous improvement methodology for eliminating defects in a product, process or service. It was developed by Motorola in early to middle 1980's based on quality management fundamentals, then became a popular management approach at General Electric (GE) in the early 1990's.

Sigma represents the population standard deviation, which is a measure of the variation in a data set collected about the process. If a defect is defined by specification limits separating good from bad outcomes of a process, then a six sigma process has a process mean (average) that is six standard deviations from the nearest specification limit. This provides enough buffer between the process natural variation and the specification limits.





Six sigma follows DMAIC Approach.

- 1. D Means Define
- 2. M Means Measure
- 3. A Means Analyze
- 4. I means Improve
- 5. C Means control

Example, if a product must have a thickness between 10.32 and 10.38 inches to meet customer requirements, then the process mean should be around 10.35, with a standard deviation less than 0.005 (10.38 would be 6 standard deviations away from 10.35).

Six Sigma can also be thought of as a measure of process performance, with Six Sigma

being the goal, based on the defects per million. Once the current performance of the process is measured, the goal is to continually improve the sigma level striving towards 6 sigma. Even if the improvements do not reach 6 sigma, the improvements made from 3 sigma to 4 sigma to 5 sigma will still reduce costs and increase customer satisfaction.



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Name of Ce	ntre / Overseas Chapter:	TIRUCHIRAP	PALLI LOCAL CENTRE
Title of Acti	vity:	Emphasis of Renew	IoT and its Application for able Energy Systems
Activity unc	ler Divisional Board	Electrical Eng	gineering
Date:	29-01-19	Venue:	IEI TLC Institution Building
Je le	EMPHASIS OF IOT AND ITS APPLICATION IN RENEWABLE ENERGY SYSTEMS DR.S.TITUS PROFESSOR OF BEDIATED		
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Dept, K Ramakrishnan College of Engineering, Tiruchirappalli-12 is presenting on the Topic through Power Point slides to the participants. Er S.Samidas Former Chairman/IEI-TLC is presenting Memento to the speaker in the presence of Dr Kevin Ark Kumar, Joint Secretary/IEI-TLC and Dr N Kumaresan Chairman/IEI-TLC.

Internet of Things (IoT)

- •The Internet of things (IoT) is the network of physical devices, vehicles, home appliances and other items embedded with electronics, software, sensors, actuators, and connectivity which enables these objects to connect and exchange data.
- •The IoT allows objects to be sensed or controlled remotely across existing network infrastructure
- •Not strictly machine-to-machine (M2M) also machine-to-people, people-to-machine, machine-to-objects, people-to-objects
- •Creates the ability to collect data from a broad range of devices
- •Data can be accessed via the cloud and analyzed using "big data" techniques



Due to global warming and depletion of fossil fuels being on the rise, the world is focusing towards alternative sources of fuel to power its needs. The most sustainable option is the renewable energy. The field is massive spreading across various areas of energy resources such as solar, the wind, hydro, and geothermal. The global market is becoming one of the most thriving business in the world. Hence, efficiency, operating costs, profitability, and productivity has taken a prime importance. This cannot be just improved by mechanical or electrical engineering but with the ability of continuous monitoring and maintain high performance over the time. This is where IoT plays vital role.

Internet of Things Technology Make Life Easier?

The "Internet of Things" is getting better and bigger day by day. There are 15 billion Internet of Things devices connected, but there will be more than 25 billion Internet of Things devices may be connected by 2020 based on IoT concept.

Renewable Energy Industry

For utilities such as the electricity grid, streetlights, and water pumps, wireless sensors offer a lower-cost method for reducing energy usage and optimizing energy resources, along with collecting system data. With time and more data points, the energy usage of the household appliances and perform necessary actions such as supplying and blocking the electrical energy to a household appliance.

The communication can be achieved by Zigbee technology for transferring data of energy usage, power, voltage and current consumed by a particular household appliance to the cloud server.

The energy of various renewable energy sources (wind turbine, solar panels etc.) is computed and incorporated into existing energy sources, for operating various home appliances to cut electricity costs. The home appliances could be anything. Typically, the most energydemanding ones are washing machine, refrigerator, air conditioner etc.

A refrigerator works continuously throughout the day, and the power loads fluctuate a lot due to the variable activities of the compressor system and cooling process. AC is also a compressor based cooling system. The compressor works continuously until the temperature is equal or below the set level. The energy consumption of lights is less compared to other appliances, but not negligible. Moreover, unnecessary usage of lights leads to energy wastage. lot-based technology solutions across the globe, associated services foresee to bring tremendous value to the energy sector in future.



Name of	Centre / Overseas Chapter:	TIRUCHIRAPPALL	I LOCAL CENTRE
Title of A	ctivity:	Solar Passive Arc Buildings	hitecture and Energy Efficient
Activity ι	nder Divisional Board	Architectural Eng	gineering Division
Date:	05-02-19	Venue: IEI TLC Institution Building	
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The Pro	Speaker Dr.C.V.Subramanian fessor Department of	Er D.Harsh Bharat Hea	a FIE , Former General Manager, vy Electricals Ltd.Tiruchirappalli-14

Professor Department of Architecture Periyar maniammai Institute of Science & Technology Vallam,Thanjavur is presenting on the Topic through Power Point slides to the participants.

Bharat Heavy Electricals Ltd.Tiruchirappalli-14 is presenting Memento to the speaker in the presence of Dr.N.Kumaresan Chairman and Dr.Kevin Ark Kumar Joint Secretary of IEI TLC

Solar Passive Architecture and Energy Efficient Buildings

Solar passive architecture concepts and principles are used in traditional buildings worldwide. Thermal performances of such traditional buildings are well within the comfortable range as prescribed by thermal comfort standards. But in most of the contemporary buildings, the indoor environmental conditions and thermal comfort are unsatisfactory due to improper design. To reinforce the study, a Questionnaire survey was conducted among 244 occupants of traditional and modern houses of the region to assess the thermal comfort. The findings of the survey also revealed the traditional houses are more comfortable than modern houses. Qualitative analysis of the traditional and modern houses of the region is carried out to study the solar passive features incorporated in the traditional buildings and that lacks in modern construction.

The aim of the research work is to design and construct a modern residential building with available modern building materials in warm and humid climate of Thanjavur with solar passive architecture concepts that can make the building thermally comfortable like traditional buildings. The above research is achieved by the following objectives:

- To determine the effect of various thermal comfort parameters like temperature, humidity and air movement among the occupants of traditional and modern buildings in Thanjavur region by questionnaire survey.
- To design and construct a modern residential building in warm and humid climate of Thanjavur with solar passive architecture concepts that can make the building thermally comfortable like traditional buildings.
- To investigate the thermal comfort in the newly constructed solar passive residential buildings by determining the following parameters - indoor and outdoor temperature, indoor and outdoor relative humidity, solar insolation, air flow inside the building and globe temperature (tg).
- To compare the performance of the newly designed solar passive modern building with other modern and traditional buildings of the region to resolve thermal efficiency of the building.
- To perform statistical analysis and determine regression equation for indoor temperature.
- To arrive on design recommendations suitable for Thanjavur region.

Ten solar passive architecture strategies have been incorporated in the designed building which include orientation and planning, courtyard design, light coloured painting, white roofing tiles, shading elements, solar chimney and sky light, cross ventilation, landscaping, roof level ventilators and high ceiling roof.

Thermal performance of the constructed house is studied for a period of 12 months. Statistical analysis is carried out using Statistical Package for the Social Sciences (SPSS) and a linear regression equation suitable for Thanjavur is arrived based on the study. Thermal performance analysis of the designed building is compared with other modern buildings and traditional buildings in the region for the peak summer period. The study on designed solar passive house indicates that solar passive techniques can bring indoor temperatures down enough for comfortable indoor environment to the occupants. It is observed that the temperature of the designed solar passive building is 2°C to 3°C cooler in summer in comparison with the other modern buildings. It is evident from the study that design of building plays a major role to save energy which in turn will have an impact on national and global economy.





Name of Centre J Overseas Chapter: TRUCHIRAPPALL IOCAL CENTRE Title of Activity: Digitalization in Jower Systems Activity under J isional Board Electrical Engine Joision Date: 11-02-19 Venue: IEI TLC Institution Building Image: Station in Statistic Statisti Statistic Statistic Statistic Statistic	Name of Centre / Overseas Chapter:TIRUCHIRAPPALLI LOCAL CENTRETitle of Activity:Digitalization in Power SystemsActivity under Divisional BoardElectrical Engineering DivisionDate:11-02-19Venue:Image: State Stat				
Title of Activity: Digitalization in Power Systems Activity under Disonal Board Electrical Engine Division Date: 1102-19 Venue: IET IC Institution Building Image: State	Title of Activity:Digitalization in Power SystemsActivity under Divisional BoardElectrical Enginering DivisionDate:11-02-19Venue:IEI TLC Institution BuildingImage: Division Power SystemsImage: Division Power SystemsImage: Division Power SystemsImage: Division Power SystemsDivision Power SystemsImage: Division Power SystemsImage: Division Power SystemsDivision Power SystemsImage: Division Power SystemsImage: Division Power SystemsDivision Power SystemsImage: Division Power SystemsImage: Division Power Point Slides to the participants.Dr.N.Kumaresan, Chairman/IEI-TLC is presenting Memento to the speaker in the presence Er A.Anand, Hon. Secretary IEI TLC	Name of Centre	e / Overseas Chapter:	TIRUCHIRAPPAL	LI LOCAL CENTRE
Activity under Ursonal Board Electrical Engine Division Date: 1.102-19 Venue: Ist TLC Institution Building Image: Im	Activity under Dissional Board Electrical Engineering Division Date: 1.02.19 Venue: IEI TLC Institution Building Image: State Sta	Title of Activity:		Digitalization in	Power Systems
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Title of Activity:		Mobile Cloud Co	omputing in Energy Systems
Activity under Divisional Board		Computer Engin	eering Division
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Mobile Cloud Computing in Energy Systems

In the deregulated environment, industries such has generation, transmission and distribution are making new issues in power system operations and planning which are foreseeable. The need for integrated and distributed applications for power system analysis is increasing significantly from the last decade. The large interconnected power system requires a widespread computational environment and needs to communicate between the service provider and client in heterogeneous environment.

The drastic growth of mobile applications has been made possible due to the propagation of technological advancement. It can effectively support the higher education and industrial system. Subsequently, m-learning has been introduced as a learning method that uses the mobile phones. M-learning is a kind of learning which uses the mobile devices like cell phones, personal digital assistants (PDAs), laptop.



For the growth of an innovative technology in recent years, an open-source platform Android OS has been widely used in all smart phone applications. The advent of the smart phone has almost rewritten our life style in a different manner. The maximum of day to day activities may be fulfilled by the mobile phones. Mobile app development has been steadily growing but minimum of power system engineers can attempt to develop the application for solving the power system studies in mobile OS platform. In our ultimate objective is to generalized mobile app for power flow solution in small networks deployed in android based Smartphone recommended to the academic institutions

The Cloud Computing has changed the way of development, deployment, updation and maintenance of power system applications and the infrastructure on which they are being executed. Cloud computing when properly implemented, provides the users with greater flexibility, portability, and choice in their computing options. Cloud computing defines a model where specific services are assigned to systems that are accessed through a network. It is a type of computing in which dynamically scalable and often virtualized resources are provided as on demand services over the Internet.

The cloud environment that provides Platform as a Service (Paas) allows various power system applications developed using different programming paradigms to interact with each other without any modifications. When Software is provided as a Service (Saas), it allows the electrical network service providers to develop the power system services and host them in the cloud environment which are used to serve the power system clients.

The cloud hypervisor manages the servers and the virtual machines and thus allocates the necessary hardware on demand thereby providing Infrastructure as a Service (Iaas). The deployment of applications in a cloud environment reduces the cost for service providers when compared other distributed environments.



Notification for R&D Grant-in-Aid

To promote appropriate technology, assist in building up design & research talents and, most importantly, to help in nurturing potential R&D venture amongst engineering students pursuing Diploma/UG/PG/PhD courses, The Institution of Engineers (India) had instituted the R&D Grant-in-Aid program way back in 2001. Like every year, the Institution invites applications for the session 2017-2018 for funding industry-oriented R&D projects and research initiatives aimed at improving the life-style of common people from engineering students pursuing Diploma/UG/PG/Ph. D courses. The application form and guidelines are available in our website https://www.ieindia.org. The projects should be carried out under the guidance of faculty members who are Corporate Members (AMIE/MIE/FIE) of IEI. Membership criteria for students are as follows:

Project Category	Student/Applicant Membership
Diploma	Not mandatory, Membership of
	Students' Chapter is desirable
UG (B.E/B.Tech/AMIE/Equivalent)	Should be 'Student Member' (SMIE)
PG (M.E/M.Tech/Equivalent)	Should be 'Corporate Member'
PhD	Should be 'Corporate Member'

The soft copy of the duly filled-up applications (in editable format), as per the given proforma, should be sent through email to research@ieindia.org and one printed copy of the same should reach the following address:

Director (Technical)

The Institution of Engineers (India), 8 Gokhale Road, Kolkata 700 020

Applications received in format other than that available on our website will not be accepted. Application should be forwarded through the Guide, Head of the Department or Head of the Institution. Please note that preference will be given to project proposals received from Institutions who are members of The Institution of Engineers (India). Kindly go through the guidelines

(visit link https://www.ieindia.org/PDF_IMAGES/R&D/General%20Guidelines.pdf) carefully before filling up the application.

The grant is not intended for the faculty members who have access to other avenues of research funding. Proposals received will be scrutinized and the recipients of R&D Grant will be informed accordingly.





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