

IEEE

October - December 2019

POWERSCOPE

The Newsmagazine of PES Kerala Chapter

Vol. 1 Issue 1



EDITOR



Deepna P

DESIGNER



Aadil Mohammed
Mansoor

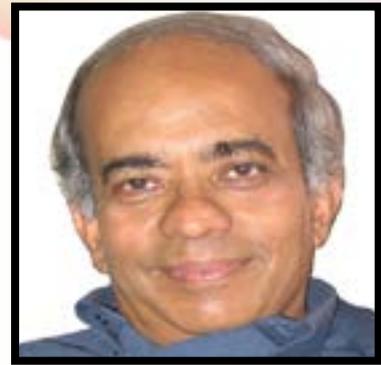
EDITORIAL BOARD



Prof. V. K. Damodaran



Prof. P. S. Chandramohan
Nair



Er. A Suhair



Dr. Bobby Philip



Er. Anandhu S Kumar

CONTENT EDITORS



Haritha H



Archa S Sudhi

CO-DESIGNER



Aslam Ubaid

IEEE PES KERALA CHAPTER EXECOM 2019

ER. A K SUHAIR - CHAIRPERSON

DR. SOBHA MANAKKAL - VICE CHAIR

DR. BOBY PHILIP - SECRETARY

ER. A G HAREENDRALAL - IMMEDIATE PAST CHAIR

PROF. V K DAMODARAN - VISION PLAN AND STRATEGIC MGMT

PROF. K BIJU - MEMBER DRIVEN INITIATIVES

PROF. BIJUNA KUNJU - INDUSTRY - ACADEMIA INTERACTIONS

PROF. MUHAMMED KASIM - STUDENT CONTESTS

PROF. P S CHANDRAMOHANAN - TECHNICAL PROJECTS

ER. K R VENUGOPAL - MEMBERSHIP DEVELOPMENT

PROF. K SUNITHA BEEVI - WOMEN IN POWER

DR. NAFEESA K - EDUCATIONAL ACTIVITIES

ER. RANJIT R NAIR - AWARDS AND RECOGNITIONS

PROF. SREEJAYA - PROFESSIONAL DEVELOPMENT

ER. JAYAN P PADMANABHAN - TECHNICAL ACTIVITIES

ER. VARGHESE C M - INDUSTRY RELATIONS

ER. AJITH GOPI - RENEWABLE ENERGY

ER. HARIKUMAR P - COCHIN SUBSECTION

PROF. ASHOK S - MALABAR SUBSECTION

ER. ANANDHU S KUMAR - STUDENT BRANCH ACTIVITIES

PROF. PRABHIN JAMES - YOUNG PROFESSIONALS

IEEE PES KERALA CHAPTER STUDENT TEAM 2019

MALABAR

AJITH M -Activity coordinator
ARJUN AK - Activity coordinator
Deepna P- Women In Power Coordinator

KOCHI

Nithin VM- Activity Coordinator
Anne Benoy-Activity Coordinator

TRAVANCORE

Ashwin V Nair-Activity Coordinator
Akhil Ahammed- Activity Coordinator
Hamna Sunil- Women In Power Coordinator

Sreekesh E -Electronics Communication Coordinator
Sajna Mohammed -Electronics Communication Coordinator

Amal J Nellickan- Membership Development Coordinator

Archa S Sudhi- Content writer
Haritha H-Content Writer

Zacharia Joshy- MD team member
Aadil Mohammed Mansoor-Designer
Aslam Ubaid-Designer

Akshay Krishnan -Webmaster

CONTENTS

IEEE	1
IEEE POWER & ENERGY SOCIETY	1
IEEE PES KERALA CHAPTER	2
Message from the Chairman	3
Editor's Note	4
E-Mobility in the context of Kerala	5
Disruptive approaches in Aerospace	8
Smart cities matter	11
IEEE PES KERALA CHAPTER YOUNG PROFESSIONALS MEETUP AT KUDAMKULAM POWER PLANT	13
AWARDS	16
CHAPTER HIGHLIGHTS	19
CHAPTER MAIN EVENTS	32
Student Branch Events	50

IEEE

IEEE is the world's largest technical professional organization dedicated to advancing technology for the benefit of humanity.

Abbreviation of Institute of Electrical and Electronics Engineers, pronounced I-triple-E. Founded in 1884 as the AIEE, the IEEE was formed in 1963 when AIEE merged with IRE. IEEE is an organization composed of engineers, scientists, and students.

The IEEE plays a significant role in publishing technical works, sponsoring conferences and seminars, accreditation, and standards development. With regard to LANs, the IEEE has produced some very popular and widely used standards.

IEEE Power & Energy Society

The IEEE Power & Energy Society (PES), formerly the IEEE Power Engineering Society, is the oldest society of IEEE focused on the scientific and engineering knowledge about electrical power and energy.

The IEEE Power & Energy Society is a worldwide, non-profit association of more than 32000 industry professionals, academics and students with a common interest in the electric power energy industry. PES has vibrant communities at the local chapter level and at the international level through our conferences, publications and technical committees. IEEE PES KERALA CHAPTER is one of the active chapters under IEEE Power & Energy Society.

Our mission is to be the leading provider of scientific and engineering information on electric power and energy for betterment of society, and the preferred professional development source for our members. The scope of the society embraces research, development, planning, design, construction, maintenance, installation and operation of equipment, structures, materials and power systems for the safe, sustainable, economic and reliable conversion, generation, transmission, distribution, storage and usage of electric energy, including its measurement and control.

IEEE PES Kerala Chapter

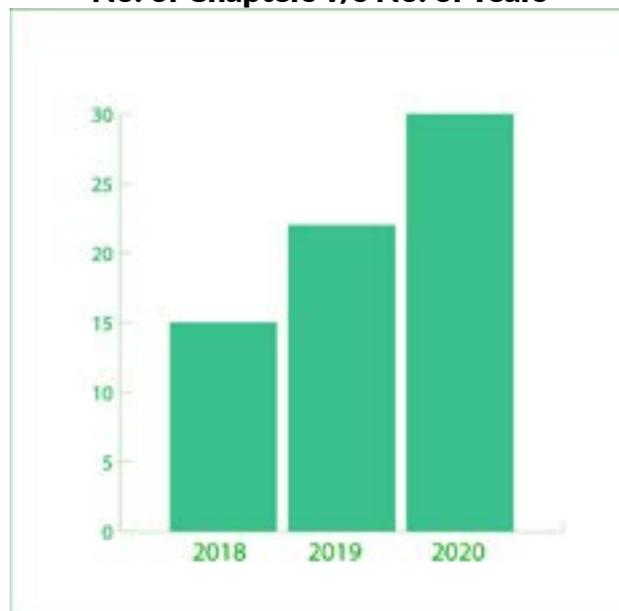
IEEE PES KERALA CHAPTER is one of the active chapters under IEEE Power & Energy Society. Our mission is to be the leading provider of scientific and engineering information on electric power and energy for the betterment of society, and the preferred professional development source for our members.

Membership Growth:

The Power & Energy Society, Kerala Chapter is one among the prominent technical societies of IEEE Kerala Section. PES is a platform for sharing the latest technological developments in the electric power industry, educating members of the industry and the general public and developing standards that guide the development and construction of equipment and systems. It is led by professional leaders who have expert knowledge in this field.

Perceiving the motives and values, there is significant increase on the number of people joining PES every year. The notable change that occurred in the membership growth was between the year 2018 and 2020. In the year 2018 the sail took off with 15 chapters which moved across almost 22 chapters by the year 2019 and finally at the beginning of 2020 it reached the destination with 30 chapter across the State, doubling the figure from the start. The membership crossed a landmark figure of 2000 by end of 2019. The rise in graph showcases the impact that PES achieved in moulding professionals. With spirited leaders and enthusiastic members, the IEEE PES Kerala is heading to conquer greater heights.

No. of Chapters v/s No. of Years





MESSAGE FROM THE CHAIRMAN

At the outset, let me wish you all a very happy new year brimming with energy and enthusiasm in every sphere of your activity.

PES Kerala Chapter has recorded phenomenal growth in the recent years, thanks to the spirited work of the PES team and student leaders. The membership of 12 when the Chapter was formed in 1999, shot up to 2084 on 31st December 2019. There was 50% increase in aggregate membership from last year. While student members grew 50% from last year, higher grade members grew over 40%. The PES Student branches doubled in two years making the current strength 30. The Chapter also ranked high globally winning High Performance Chapter Awards in 2016, 2017 and 2018, Outstanding Chapter Award for Activities in 2017 and many other laurels. It is also a matter of pride that Kerala Chapter was chosen to host the Asia Pacific Power and Energy Conference in 2021.

2019 activities started with Annual General meeting held at Maurya Rajadhani, Trivandrum on 5th January 2019. We have clocked over 50 programmes in 2019 besides a number of student activities. The vibrancy of activities was maintained throughout the year.

As students form significant portion of our membership, the Chapter was giving due attention to student centric activities. PES State level Quiz contest for first year engineering students regularly conducted for a decade helped to introduce IEEE PES to the student community. Besides this, several other contests and training programmes made PES popular among student community. The member driven initiative (MDI) of PES helped students get funding for several creative projects. All Kerala Student Colloquium organized regularly every year enabled networking and meeting with stalwarts in industry and academia. We have also shaped a student leadership team in 2019 giving them opportunity to organize and monitor PES activities and run a news magazine and website.

The Chapter also took initiative to connect industry and academia to identify industrial and utility problems and engage students, faculty and researchers find solutions. The efforts to organize DLP, expert talks, specialized workshops and conferences boosted the interest of senior members. We have maintained close liaison with WIE, YP, LMAG, Section and other Technical Societies in conducting variety programmes. Together with LMAG, PES made social interventions to empowerment of women in rural and tribal sectors.

The Chapter leaders meet at regular business meetings, attended important regional meetings such as recent Chapter Chair meeting at Macau, PES India Council Meeting, TENCON2019 at Kochi and PESGRE2020.

Er. K.R. Venugopal, Prof. K. Biju and Prof. Prabin James winners of 2018 PES HQ Awards were presented the awards in 2019. Chapter Awards were given to Vishnu Pillai, Abhinav and Outstanding Student Branch Awards given to NSS College of Engineering, Palakkad, College of Engineering, Chengannur and College of Engineering, Karunagappally. Prof. P. S. Chandramohan Nair, Er. Ajith Gopi and Er. Anandhu S. Kumar were nominated for 2019 PES awards

The Chapter is keen to upgrade eligible members as senior members. All members who have not renewed membership in 2020 are kindly urged to do so without delay.

I wish to thank my colleagues in the Execom and student leadership team for their unstinting support in 2019. Special thanks to Prof. V .K. Damodaran, Er. A. G. Hareendralal, Prof. Bijuna . Prof Mohammed Kasim, Er. C.M. Varghese and Er. Anandhu for various initiatives.

We are looking forward to serving PES community with more vigour and passion in 2020. Soliciting your continued support..

A.SUHAIR
Chair, PES Kerala Chapter
aksuhair@gmail.com, 08089038094

EDITOR'S NOTE

Deepna P

A famous Stephen R. Covey Quote goes like this: “Interdependent people combine their own efforts with the efforts of others to achieve their greatest success.” IEEE PES Kerala chapter is a blend of people with clear vision and strong determination who are yearning to do much in the technical front..

A technical society with a strong row leading in front by Er. A.K.Suhair, Dr. Sobha Manakkal and Dr. Boby Philip, mentored by veterans Prof. V.K. Damodaran, Er. A.G.Hareendralal, Student Activites driven by a dynamic Coordinator Er. Anandhu S Kumar and a host of experts from academia and industry responsible for myriad activities, the Chapter evolved to peak performance level winning global recognitions..

Redefining it's tag line “more_power_to_the_future”, the Chapter focuses to build up strong aspirants and technically equipped engineers to the society, for the future . Conducting and coordinating 50+ technical event each year and as a succour, the IEEE PES Kerala Chapter continues its expedition as one among the best societies.

The voyage to a number of 30 student branch chapter over these years was not an easy ride. Overcoming many obstacles with a strong motive, the chapter proved to be the perfect carving of strong determination and hardwork. The working of the chapter really satisfied the words that ‘nothing could stop the determined minds from achieving success’.





E-mobility in the context of Kerala

M Sivasankar IAS, Secretary I&T, Govt of Kerala

I am very happy that a workshop on e-mobility in the context of Kerala has been arranged today. While I was holding the charge of KSEB and was given additional charge of Transport department for a while. I had the privilege to participate in the event called Berlin Energy Transition Dialogue (BETD) held in Berlin every year. As you all are aware, Germany is a country that has substantially introduced non-conventional energy, primarily solar energy into its grid. The whole transition of German economy has been an interesting case study and I became a true believer of non-conventional energy thereafter. I was able to form a small group of 5-6 officers in KSEB to attend this event. These people also became die hard electric mobility fans after attending the BETD workshop during my service in KSEB.

To put things in perspective, when we started looking at electric mobility in the context of Kerala, globally this whole electric mobility thing has been rearing around primarily personalized vehicles which are the cars. What we realise that in Kerala it would be difficult to work in cars or scooters. Regarding cars there are large car manufacturing companies with a set of standards and with scooters it is being used mostly by youngsters and men who would require speed, thrust etc which electric vehicles can not currently provide to the extent of preference. So it was decided to focus e-mobility in Kerala in three other major intervention areas -:

1. Bus
2. Autorickshaw and
3. Boat.

The journalists in Kerala have not understood how the power system in the state works. They have been writing for the last twenty years in the newspapers like Malayala Manorama, Mathrubhumi etc that the Idukki reservoir level has come down the warning of possibility of powercuts or load shedding in the State. Kerala consumes about 24,000 million units of power in a year and the total generation from hydro is hardly 6,500 million units. Even if there are no rains, we will get 6,000 million units and if there are good rains, we will get 7,000 million units.

People never understands that 1000 million units is not a problem if we are able to derive 17,000 million units from elsewhere.

We have made alternate arrangements by getting into long term power contracts that will meet our demands till 2020-21. When we got into long term power contracts what we realised was that the long-term power from generators of Chattisgarh or Madhya Pradesh will be available round the clock. But in Kerala, the demand is such that we have a peak demand in the morning, in the night and now there is a peak demand in post 11'o clock period because lot of people started using air conditioners. There is also an interesting small peak in the afternoon because more people retired and confined to homes. Rest of the daytime and late night from 2 PM - 5 AM we are not in a position to absorb the full power which we have contracted for due to the absence of demand. So, we actually surrender the power by paying the fixed cost. This is where the e-mobility really fits in. If we have a mechanism where we can have incentivized time of the day charging during 1'o clock in the night and 5'o clock in the morning and between 10' o clock in the morning to 1' o clock in the afternoon or from 4' o clock in the afternoon to 6' o clock in the evening, these three slots if KSEB decides to charge at least the fixed cost, KSEB stands to win. This was the basis on which the whole e-mobility stuff was positioned.

When the new Government came, we constituted a committee headed by Prof. Ashok Jhunjunwala and Sajid Mubashir and Reji Pillai of Smart Grid Forum for advising us on the project. In the opinion of Ashok Jhunjunwala all three slots will be fine from KSEB point of view and you need to fix a tariff for power from an industry viewpoint and that tariff should be unchanged for the next three years. So, we discussed with KSEB, Regulatory Commission and agreed that KSEB will provide power for charging at Rs 5.50 Paisa flat that has been the major corner stone of the policy.

Three things happened:

It was decided to focus on buses, boats and three-wheelers

Decided that KSEB would be the power utility for providing the facility and the charging facility would be created at all the substations available with KSEB

Rate of power would be Rs 5.50 paisa.

Then there shoot up a lot of debates and controversies which took over a year for fixing up the charging standards- Bharat standard versus International standard. Thus, came the

interesting model of swappable batteries. As there are lower number of moving parts for electrical vehicles. theoretically life of vehicles is much larger than a conventional gasoline IC engine vehicle. The maintenance costs are also much lower. If we reduce the battery cost practically the capital investment of the vehicle would be lower than we pay for IC engine vehicle. The moment we remove the battery and buy a vehicle which do not have a battery in it then the capital cost would be much lower than we spend to buy an own vehicle. Battery technology is a technology that is still in evolution. The risk of investment in battery is due to its change in technology which the state should take care. This was the model agreed about.

This again was a serious learning on the basis of what we did in the solar and wind plant dissemination. Both the cases what we ended up was that we had a mechanism by which user would pay the capital cost and he would get a subsidy by the state. The zigma of all the subsidies of users paid to would be a chunky amount. That amount will go into common infrastructure that is battery swapping, charging stations etc. Individual consumer will be able to get the vehicle at a cheaper cost and his running cost would be much cheaper than that because of its level is Rs 5.50 paisa. There is a direct financial incentive for the individual user to get the e-vehicle. This was the elements of the policy. During that time again the newspapers reported that it was a conspiracy to help the battery businesspeople. But now the policy got opened to the society.

In short, we have identified the segments, laid a broad policy in place, and also gone one step further that in three corporation namely Thiruvananthapuram, Kochi from 1 April, 2019 no new permits will be issued to autorickshaws unless they are electric vehicles. Since it can't be corporation centric alone, it was extended to three districts as a whole. And finally, the transition of three wheelers into electric autorickshaw will begin latest by 1 June ,2019.

Buses, we have an interesting model/ It has been planned to run complete electric buses during the Neelakurinji season to Munnar which did not take place due to the occurrence of flood in Kerala. So, it was decided to deploy ten electric buses intensively in the Sabarimala route during pilgrim season and was a massive success. Now the models have been evolved and we need not do the capital purchase but has to take buses for lease from companies which turned out to be cost effective. ESL company has come up with the offer of providing an electric car on dry lease for Rs 20,000 per month, wet lease with

chauffeur for lease amount of Rs 40,000 per month, offering sedan type of vehicle for total of 11.8 lakhs. So, the mobility is now happening.

We also had the first solar boat which was manufactured by a start-up company in Kerala “Novalt” which proved to be a success. Now more boats are being introduced as its operating expenses are very low though the capital quite high compared to a normal boat. This is the broad framework within which the electric mobility in Kerala has happened so far. Once the standards are framed up and decisions have been taken upon battery swapping model type of thing and the financing arrangements are in place, I am confident that we will have large deployment of electric vehicles happening in the state in a very short period of time. One thing is that his group in I&T department was working as a secretariat for this change. Ultimately the permission have to be issued by the transport department and the whole idea was that the electric vehicle is to be treated as a hardware component we can actually have a hardware ecosystem go around that including the power systems, manufacturing of component type of thing and we thought to classify it as a hardware intervention.

EV type of thing as for the business policy generally should fall between transport and industries and so the work done by I&T has been handed over to transport & industries departments put together. Because of that there is some lack of continuity but now I think that the two departments have internalized it and hope that the progress would be much more faster and more visible in 1-2 years.

KSEB is a very conventional organisation and generally don't believe in these type of non-core activities. Thanks to BETD participation, series of interaction which I was able to have with KSEB, Prof. V K Damodaran others in various areas of KSEB who have taken up the charging infrastructure role out as their territory and are fairly well equipped to do it. Meantime NTPC has come up with the idea of setting up series of charging stations like petrol pumps. Bharath Petroleum Corporation (BPCL) has suggested that they will be able to convert their pumps into electric charging pumps as well. So the elements of a quick role out and adaptation of the policy by institutions, by way of policy, by way of technology availability is all there and the only missing element which we have right now is financing arrangement which some banks or financial institutions need to come out with a clear financial plan.

It would be really good if we are able to fix the daily instalment at a nominal rate suitable for

autorickshaw drivers, Uber type of entity comes up and adapts it in a very big way, or have could get a some manufacturing units to the state to work out the plan which is almost on the cusp of it. I went to Taiwan and saw the electric scooter “Gogoro” which is extremely popular there. It has two cylindrical batteries and the model is swapping (that is take out the battery and put it into battery dispensing slot, it is all networked and with the application of apps would get the nearest location of the swapping station). I rode this scooter and felt it really good. I believe that in the recent future there would be a paradigm shift in the conventional model of automobiles in the state. Electric vehicles will evolve out entirely different business model is the overall scenario.

What is important now is that for civil society particularly professionals should keep tag of the current deployment and urge the Government to go a bit faster by overcoming the controversies. I think that IEEE is an apt organisation to do it. As SCET is having different wings of engineering it should actually set up a dedicated group from your Alumni, professors & staff so that the whole programme of electric mobility induction can be monitored closely from the technology, commerce, business sides and as well as from the R & D side especially networking with C-DAC, NIIST and can do an excellent academic work. All these type of works can give interesting engagements for students and faculty.

He strongly urge IEEE to take a major role in monitoring e-mobility transition in Kerala and also to empower perhaps SCT college appropriately so that they can become a very active academic institution and the student chapter begun can get things done. When I was invited for IEEE function, I was told that IEEE conducts more than 365 programmes in a year. Then they could update and spread the message of e-mobility to half a lakh professional audience. As a result, if at least 10% of audience actually buy electric vehicle and start using it the motor also could get done. In my opinion there are different ways by which IEEE can collaborate and cooperate with SBI etc to get things done and accelerate the programme rather than merely leaving the issue to Government where the officers change, their priorities and issues may change.

We need to put the e-mobility issue into the mindset of people. That can be best done by civil and professional society. This is the present gap generally we have in Kerala. I hope that similar workshops, associations like IEEE, vibrant institutions like SCT College could play a major role effectively.



Disruptive Approaches in Aerospace

Dr. S Somanath

To enable the space travel or explore there is only one technology known to human being today ie chemical rocket propulsion. It is something that generate energy required for the space craft to propel. If one need to explore the Universe, we need to travel outside the sphere of the gravity of the Earth for which what we have today is only rocket technology.

As rocket technology started 60 years ago the ability of human beings to explore the space might have also started at that time. We thought Sun has only got the solar system. But we have been able to find out today there is a planetary system for every star which was not known to us 25 years back. There are at least 4000 exoplanets discovered now. Exoplanet is a planet just like the earth which is rotating around the Sun and there is possibility of life forms and the temperature there would be comfortable for life. Probably there would be atmosphere with oxygen, water and one day there would be scope for human beings to migrate to this planetary system from Earth.

All this happened because of observatories we have deployed in the space. Space has an advantage that it has a baggage space for observation. One such observatory

discoveries is of the potential habitable exoplanets discovered recently having the ability to support life like Earth are Kepler-62 e, Gliese 581 g, Gliese 667C, Kepler-22 b, Tau Ceti, Kepler 62 f, Gliese 163 c, HD 40307 g, Gliese 581d. Every year 10-15 new planets are discovered, because of the type of observatories we have put in the space. This only gives new opportunities for explores to explore and then assess whether there are minerals, water etc., and which planet is habitable.

There are large amount of work going on in exploratory findings on news satellites. Many missions are on the pipeline. Some of them is James Webb space telescope. It is a very large telescope based on mirror systems which America is planning to launch. It is just getting ready.

Engineering Marvels that changed our concepts.

America is celebrating 50 years of the moon landing in October 2019. Neil Arm Strong and Edwin Aldrin are the two persons succeeded in landing the moon in Apollo. Landing on the Moon is one of the important milestones they have achieved. The orbit of the heavenly planet Moon has been broken by this single mission and it actually scored up a large amount of technological activities in America. People raised question on what America Achieved by sending human lungs to Moon, what Russia achieved by putting effort in sending them to Moon, what Russia achieved by putting effort in sending the robotic machines to the Moon? The real answer lies in the broke technologies in various other disciplines and area. It actually created the revolution in Engineering materials, created industries which are serving today for humanity in several forms.

Space shuttles: It is a marvellous achievement in humanity. It enabled people to go to space in aircraft like environment to certain research work and come back. But unfortunately, the space shuttle had to be closed down as the technology was very costly even for America to maintain it.

Today there is only one rocket available in the world for human beings to travel to space. It is Russia's Soyuz serving the ISS (International Space Station) today which people confidently approach for use even though Chinese rockets are there.

One of the concepts focusing while building

a rocket by VSSC is to lower the cost of the item. For every PSL launching the cost of rockets were 300 crores, installation of satellites would be 400 crores and is going to fall out the sea and never recovered or reused. Today people are making attempts to particularly land and recover the rockets. Many early attempts of 1980's and 1990s have failed but once a private industry came into a being, they made it into a reality. The reusable rockets like Falcon 9 and New Glemn (made by the company Blue Origin developed by Amazon CEO) for taking people to Moon and Mars. They were also developing technologies to recover the rocket and operate it like an aircraft rather than not merely travelling to Mars and Moon. Once such type of reusable rockets acting like aircraft come into force it can save the time and cost of travellers moving from one continent to another.

Refuelling in a flight from another aircraft is a disruptive technology taken place 30 years back. This changed the whole approach of rocket building and aircrafts in warfare. So, the idea of the necessity of re-fuelling of satellite in orbit between space crafts and launch vehicles is very important.

Based on the above idea the need of **LOX - Methane Engine** came into force. Two or Three LOX-Methane Engines are already designed and tested in US. Methane is the future propellant and it is possible to synthesis in other planets. Methane is useful for inter planetary propulsion. Methane is a natural gas and contains carbon and o hydrogen gas. If there is Carbon dioxide and water in a planet, we can synthesis Methane and Carbon dioxide out it. We have carbon dioxide and water in Mars and has to establish plant for the conversion to Methane and fill the rocket travel to other planets.

Another disruption technology happening is in **Additive Manufacturing** ie. Manufacturing using printing machines and not by assembly shops. We have to give the product model and the dimensions, and the machine will print the customised product with finest features. The concept of machinery and making the hardware out of it is going to vanish and our whole life will be in printing process.

Advanced Composites

The newly manufactured tank using adhesive carbon is going to be used in future rockets and the weight of the tank is much less than

the metal and is a transformative technology in the area of manufacturing.

Landing on the Moon

Chandrayaan-2 lander craft as the engine configured to land in the moon by India now. India will be the fourth country to land in the surface of the Moon in September 7. Landing in Moon and Earth are different. As there is an atmosphere surrounding the Earth, we can use parachute to land on the Earth from an aircraft. When there is no atmosphere you have to use disabling device ie, an engine and fire and balance the gravity force to land in the Moon. This technology is going to help and to be mastered for soft landing in the Moon and other planets.

Advancements in Robotics

People are thinking today to send the robots first to planets to build houses there. Using Additive Manufacturing technology, they can program the robots, use the sand, dust in the Moon and other planets and with proper chemical configuration build houses.

Suspended Animation

Traveling to exoplanet due to its extended duration travel requires human being to be kept at 'suspended animation' (means slowing the human metabolism and keeping a person alive for lengthy periods in that state). This is the technology which people are pocking on to extend the life of human beings. The technology available today enables to happen it.

Technology for merging robotics with human mind. People are working to create dummies so that human beings can experience the feelings and images directly without actually present at the difficult domains through a network connection.

Integration of robotic system into human body. Except brain and memory other bodily parts to be robotized are areas currently working on for technological transformation.

Advanced propulsion systems

People are also working on advanced propulsions systems for enabling to travel at tremendous high speed. Antimatter propulsion, Nuclear Fusion propulsion are some of the technologies far ahead of Chemical rocket propulsion.

Beamed energy propulsion

It is a method of propulsion used on Earth. For short term travel. Laser-photonic propulsion systems are currently developed to go at a much faster speed.

Interstellar Ramjet Engine

Empty space between galaxies are not empty. There is one hydrogen atom per one cubic cm space. So if we can collect this hydrogen while travelling will enable us to amass huge amount of fuel and this fuel can be used to generate propulsion. Interstellar Ramjet Engine is an interesting propulsion concept, but the difficulty is we need huge area to collect the hydrogen for charging systems.

Wrap drive

Another interesting concept is Wrap Drive. It is an idea where people can travel using gravity field existing the Universe. It is a theoretical concept and has not come into reality.

Nuclear propulsion

It continues to remain as one of the important technologies to travel immediately into space.

The Disruptive Approaches Today

1. Vertical landing and reuse of stages
2. Reused and commercial viability
3. Proposing colonisation of mars
4. Utilisation of rocket technology for transportation in cross continents.
5. Commercial viability of exploitation addressed

Rockets are going to be very cheap. It will be like aircraft travel and there is possibility for more people to go to Mars and Moon with very less cost. Another interesting proposal is to transport three lakhs of people in one year permanently to Mars and to create a human colony there. To do that technology is created by which rocket is being used for intercontinental travel. Using the money generated you can go for spacecraft. So commercial viability is exploited very well.

To conclude, Universe is not something that can be described in an English language or any languages as it is much complex network of materials and systems, so huge that it is we creating and killing itself and coming again and again so fast.

Smart Cities Matter

Prof. V K Damodaran



Smart cities matter because cities are important for what we consider as progress. Cities all along have been the engines of economic growth and opportunity.

A World Bank analysis of 750 cities around the globe from 2005 through 2012 found that economic growth in 72 % of cities were higher than national. By 2025, the world's top 600 cities are expected to account for 60 percent of global GDP. London today accounts for 20% of UK's Gross Product.

In USA, cities in the Northeast corridor (Boston to Washington D.C. and the Los Angeles metropolitan area) account for 33% of the national GDP.

Currently, more than half of the world's population lives in towns and cities.

By 2050 this number could swell to about 66%, adding more than 2.5 billion people to the urban population.

Quality of life, Economic competitiveness, and Sustainability— these 3 goals can provide the foundation for a “smart city” initiative.

Smart City 1.0—physical assets networked via

sensor technology.

Smart City 2.0 – operates at the intersection of the 3Ds - data, digital technologies, and design by people to enhance citizen experience.

The goal is to enable better decision-making through the use of data for all stake holders— governments, businesses, visitors and residents.

Changes in 6 Urban Domains - Economy, Mobility, Security, Education, Living, and Environment – are seeded by Technology.

Roles of 3 Major Stakeholders in Smart City Initiative

Citizens

1. Take a proactive role as co-creators in shaping smart city policies and initiatives.

2. Be conscious and vocal about the change that smart city transformation will entail. Acquire better understanding about emerging technologies and identify their implications to security and privacy.

Businesses, nonprofits, and social enterprises

1. Look for opportunities to partner with cities. Look for initiatives that match organizational goals..



2. Look beyond just financing smart city initiatives. Identify opportunities that could add value to both the city as well as business. Balancing the risk and reward between public and private entities will be critical.

Government

1. Start with a compelling business case. Present an idea that city residents can easily understand and articulate.

2. Run the effort as a portfolio. Rather than a single, huge project, create a portfolio of projects, each with its own business case.

3. Employ a phased approach with a series of “small wins.” Demonstrating success early is important, so help make this happen.

4. Communicate throughout the journey. Changing a culture and mind-set takes time. Focus on effective communication on change management

5. Focus on results. Pick things part by part every year and help demonstrate progress.

In these days of explosive growth, emerging technologies will shape the way cities change. Increasingly, residents and businesses will

take a central role in driving the future of our cities. Governments should aim at enabling their participation.

As is evident from what I have submitted now, informed citizens are to raise the level of a city to Smart status. It should not be a project, but a platform to work on for the people and all other stakeholders including city government.

This workshop therefore is intended to unwrap possible pathways and technologies that will help and with considered views of the participants to this get together, prepare a White Paper for all stakeholders to take note of, before venturing to make Trivandrum a Smart City.

Let me conclude by stating that this is not the end of such a debate. IEEE, VMFT and other sponsors would further generate similar discussions on its major urban domains or ‘component action areas’.

The next such session will be held tentatively in mid-February on Mobility in Smart Cities. The venue will be Sri Chitra Tirunal College of Engineering, Pappanamcode.



IEEE PES KERALA CHAPTER YOUNG PROFESSIONALS MEET UP AT KODAMKULAM NUCLEAR POWER PLANT, TAMILNADU, INDIA

Visit Diary

IEEE Power and Energy Society Kerala chapter conducted a meetup for its young professionals at India's largest nuclear power plant at koodamkulam, Tamil Nadu on 08-12-2019. The PES young professionals working at different industries from different parts of the state participated in the meetup. The number of participants were restricted to a maximum of eight, due to security issues. The meetup aimed at improving practical knowledge of the young professionals who are working in different utility-related industries. Mr. Sathish A V, Scientific officer, Koodamkulam Nuclear Power plant gave guidance to the program. The participants visited the entire plant and discussed different aspects of Nuclear Power Generation.

During the visit the participants got a chance to see a nuclear

reactor under construction which helped them to know the structural aspects of Nuclear reactor. The participants also discussed about different design aspects of Nuclear Power plant and accidents which happened in various parts of the world. The summary of the technical details of the visit is as follows:

Nuclear Power plants

A nuclear power plant is a thermal power station in which the heat source is a nuclear reactor. As is typical of thermal power stations, heat is used to generate steam that drives a steam turbine connected to a generator that produces Nuclear plants are usually considered to be base load stations since fuel is a small part of the cost of production and because they cannot be easily or quickly dispatched. Their operations and maintenance and fuel costs are, along with hydropower

stations, at the low end of the spectrum and make them suitable as base-load power suppliers. The conversion to electrical energy takes place indirectly, as in conventional thermal power stations. The fission in a nuclear reactor heats the reactor coolant. The coolant may be water or gas, or even liquid metal, depending on the type of reactor. The reactor coolant then goes to a steam generator and heats water to produce steam. The pressurized steam is then usually fed to a multi-stage steam turbine. After the steam turbine has expanded and partially condensed the steam, the remaining vapour is condensed in a condenser. The condenser is a heat exchanger which is connected to a secondary side such as a river or a cooling tower. The water is then pumped back into the steam generator and the cycle begins again. The water-

steam cycle corresponds to the Rankine cycle. The nuclear reactor is the heart of the station. In its central part, the reactor's core produces heat due to nuclear fission. With this heat, a coolant is heated as it is pumped through the reactor and thereby removes the energy from the reactor. Heat from nuclear fission is used to raise steam, which runs through turbines, which in turn power the electrical generators. Nuclear reactors usually rely on uranium to fuel the chain reaction. Uranium is a very heavy metal that is abundant on Earth and is found in sea water as well as most rocks. Naturally occurring uranium is found in two different isotopes: uranium-238 (U-238), accounting for 99.3% and uranium-235 (U-235) accounting for about 0.7%. Isotopes are atoms of the same element with a different number of neutrons. Thus, U-238 has 146 neutrons and U-235 has 143 neutrons.

Koodankulam Nuclear Power plant

Kudankulam Nuclear Power Plant (or Koodankulam NPP or KKNPP) is the largest nuclear power station in India, situated in Koodankulam in the Tirunelveli district of the southern Indian state of Tamil Nadu. Unit 1 was synchronised with the southern power grid on 22 October 2013 and since then, has been generating electricity at its warranted limit of 1,000 MW. The original cost of the two units was ₹ 13,171 crore, but it was later revised to ₹ 17,270 crore (US\$2.6 billion). Russia advanced a credit of ₹ 6,416 crore (US\$0.97 billion) for both the units. Unit 2 attained criticality on 10 July 2016 and was synchronised with the electricity grid on 29 August. In 2015, Nuclear Power Corporation Ltd (NPCIL) announced a price of ₹ 4.29/kW·h (6.4 ¢/kW·h) for energy delivered from Kudankulam

nuclear power plant. The ground-breaking ceremony for construction of units 3 & 4 was performed on 17 February 2016. Due to operators and supplier's requirement to insure the next two units at ₹ 39,747 crore (US\$5.75 billion), the cost of units 3 & 4 amounted to twice the cost of units 1 & 2.

Design and specification of power plant

The reactors are pressurised water reactor of Russian design, model VVER-1000/V-412 referred also as AES-92. Thermal capacity is 3,000 MW, gross electrical capacity is 1,000 MW with a net capacity of 917 MW. Construction is by NPCIL and Atomstroyexport. When completed the plant will become the largest nuclear power generation complex in India producing a cumulative 2 GW of electric power. Both units are water-cooled, water-moderated power reactors.

Allocation of power

Government of India announced the power allocation from the

Beneficiary	Power (MW)
Tamil Nadu	925 MW
Karnataka	442 MW
Kerala	266 MW
Puducherry	67 MW
Unallocated	300 MW
Total	2,000 MW

two units of the reactor on 29 August 2013.

Fig 2. Allocation of power from Koodankulam Nuclear Power plant

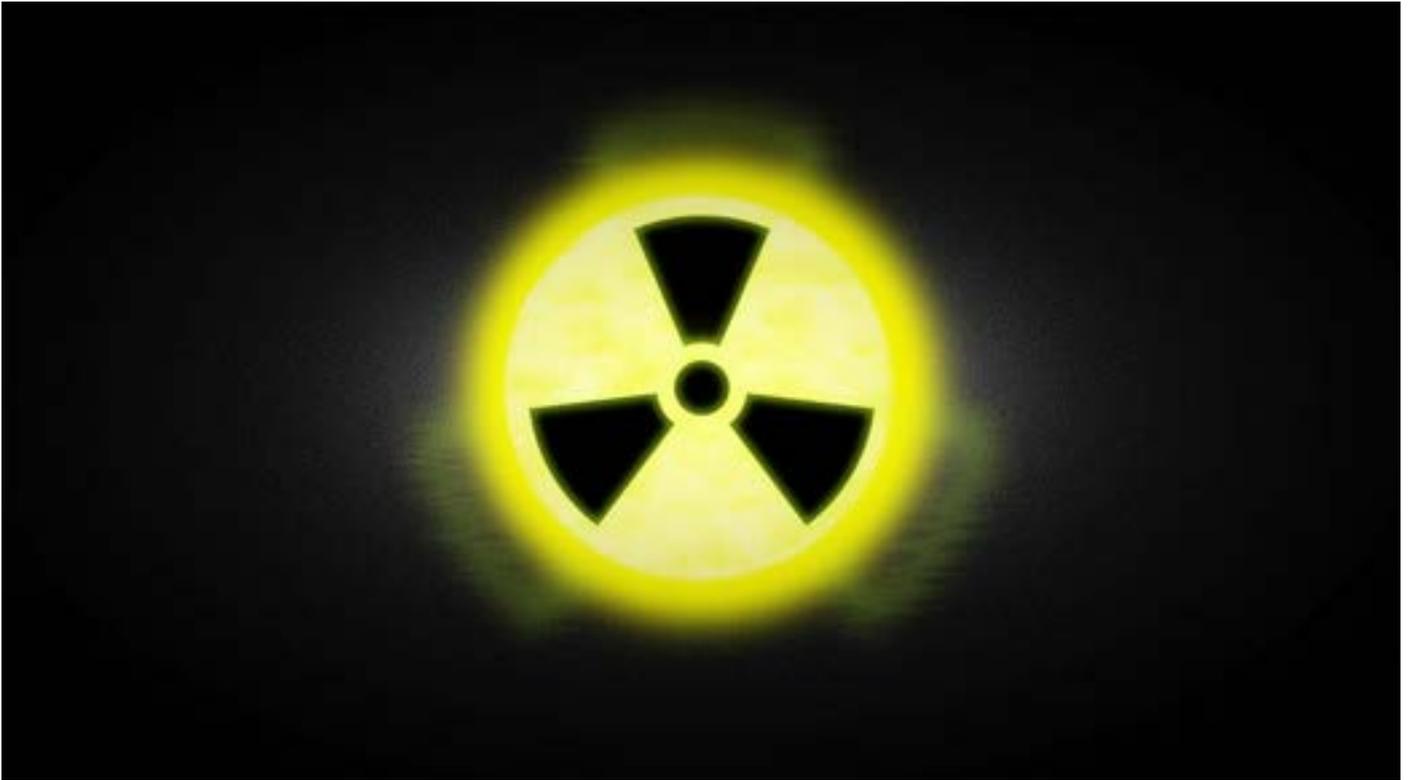
Cooling of plant

Russia's Hydro project Institute has designed the service water intake for the Koodankulam 1&2 secondary side once-through cooling system, a large complex

of interconnected structures providing cooling water from the ocean, its treatment and supply to NPP structures, and discharge to Mannar Bay. The cooling water flow volume amounts to 80.8m³/second per unit, and it will amount to 98.8 m³/s considering the fish protection system, according to Ruslan Shakirov, chief design engineer of the Kudankulam NPP service water supply system. In addition, the system has been designed to raise the temperature of the seawater at the discharge point by not more than 7°C. The customer, Nuclear Power Corporation of India, determined the level based on local seawater chemistry and other site conditions. To meet these requirements, Hydro project has designed a unique water intake structure.

The main civil structure is a square enclosed dyke set 200 m offshore. Seawater at 31°C flows into it from a reinforced concrete intake pipe constructed 1200 m away from shore on the sea bed. The position of the dyke and its streamlined walls protects it from sediment blowing offshore into shallow water during windy weather. The near edge of the dyke forms an artificial canal, bounded on the other side by the seashore, which is spanned by a road bridge. The Mannar Bay's fertile seawater hosts a great range of organisms and biomass; at peak times of year they could amount to nearly 1.5 ton per 100 m³, almost double the maximum rate of traditional filtration systems. Ingress of such a large amount of biomass would inevitably result in power station stoppages, and serious consequences for the station's electrical output.

Water intake structures minimise the amount of biomass entering the system. First, the position of the intake pipe at the sea bottom minimises uptake of biomass floating on the water



surface (and also maximises uptake of the coolest seawater, which sinks to the bottom). Second, the edges of the dyke are made up with precast concrete tetrapod structures that create an artificial reef, diverting fish from the water intake zone (large fish can swim against the current generated in the intake structure). Third, the water that enters the dyke is filtered through a trash rack filter with cells 80 mm wide and 7 m high.

Those organisms that make it through the first rack then move through a fish protection system. This is designed for drifting organisms (12-60 mm in size) that are unable to cope with the current flow. A compressor situated in a service building on the near side of the dyke pumps air to a grid of holes on the bottom of the dyke. The air comes out as bubbles, which lift floating biomass as they rise to the surface. They are directed back into the sea (into the channel between dyke and seashore) through a fish tailrace system measuring 2.5 m across at minimum. A water ejector in the tailrace system increases water velocity. The ejector pump station is also located in the service building. Meanwhile, the lower layer of water

heads toward a supply pipeline. At this point, the bottom of the dyke incorporates chute structures that create underwater rapids, tending to slow down the flow of the lower layers of water. It is slower-moving water that enters a second intake pipe, again mounted at the bottom of the dyke.

The pipes cross underneath the channel to a forebay, where it is filtered again using a traditional water filter with rotating, self-cleaning grids. To save energy, the machine stops working if the incoming water is clean. The system is designed to have a kill rate of only 20% (by comparison, Russian regulations are 30%). This water is then used by a 22 MW pumping station for secondary side once-through cooling. The main reinforced concrete structural elements of the service water supply system are submerged in seawater, which has a slightly higher concentration of salt than typical. Salt tends to erode traditional waterproofing treatments for concrete and steelwork. Hydro project used titanium and steel with special polymer coatings. Two more water intakes are planned, one for the planned units 3-6, and one for the planned units 7-8.

AWARDS

Awards are not the markers of success ,they are medium to measure some hardwork.The IEEE PES Kerala Chapter always value it's strong supporters and passionate volunteers with a glimpse of awards as a medium to value their dedication.

Best Engineer

Honouring an engineering is like welcoming the new technologies,Realising the capability and performance throughout the path ,each year IEEE PES Kerala chapter recognises the best engineers and this year the award was bagged by two

Student chapter

The success of a chapter is the result of Teamwork and coordination. The best 3 chapters which proved their sucess with their hardwork was awarded gold silver and bronze respectively.

Volunteer

A volunteer is someone who had the capability to lead something to work without expecting anything in return and the chapter was very fond with a massive number of dedicated volunteers and some among them were honoured with the best volunteer award and they are.

IEEE PES Chapter Awards from HQ

IEEE PES Outstanding Engineer (>15 years) was presented to Er.KR Venugopal (Dy.Cheif Engineer (Rtd)., KSEB).

IEEE PES Outstanding Engineer (<15 years) was bagged by Er.Prabin James (Asst.Prof,EEE, VJEC).

IEEE PES Outstanding Chapter Volunteer Award was awarded to Prof.Biju K (HOD EEE, College of Engineering Munnar).

HIGH PERFORMANCE CHAPTER AWARD 2018

IEEE PES Kerala Chapter has won IEEE PES High Performance Chapter Award 2018, having greatest bunch of active stars it is lighting as being Globally No1. Coming together is a beginning, keeping together is progress, working together is success .

#GLOBAL_NO_1

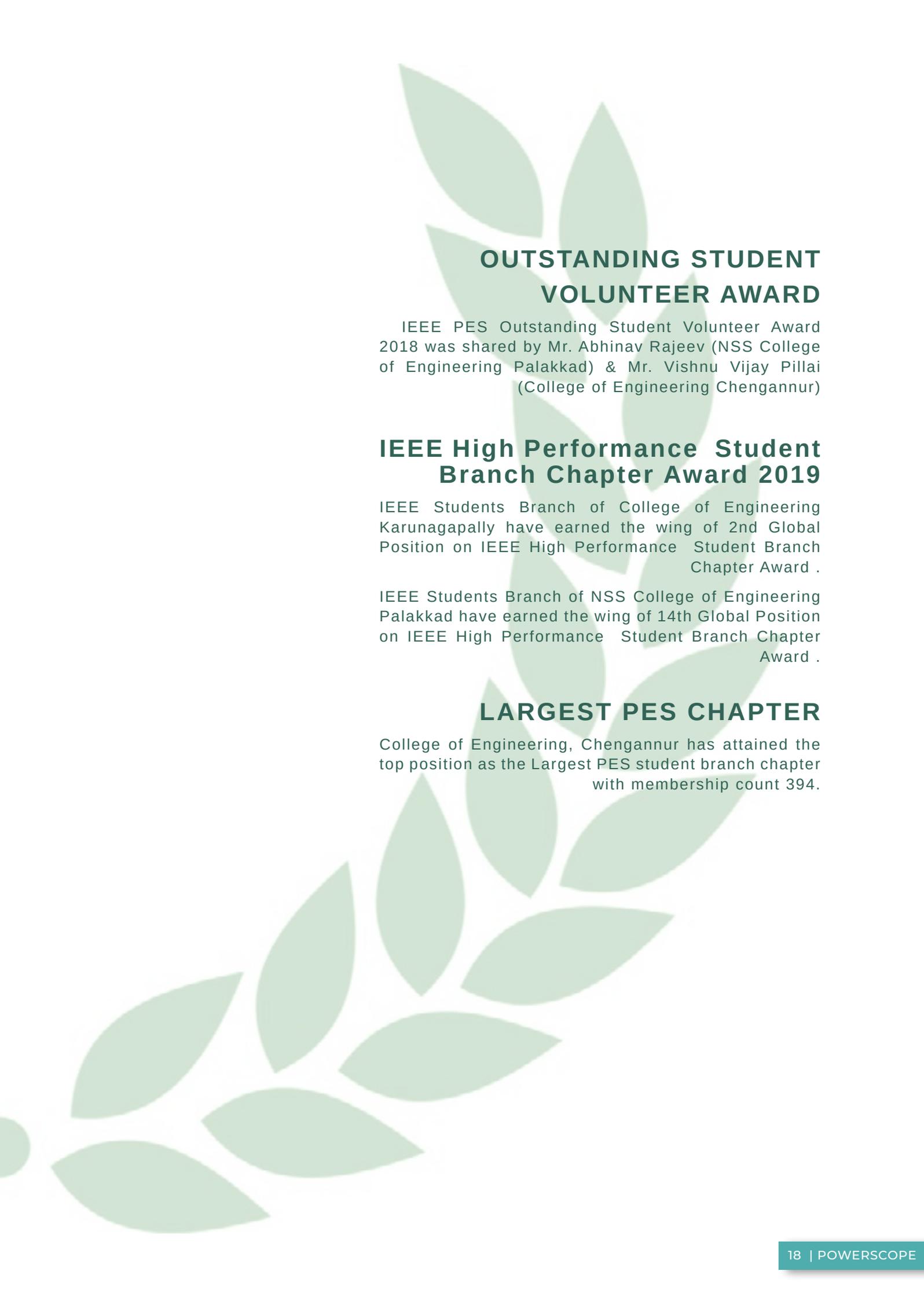
OUTSTANDING STUDENT BRANCH CHAPTER AWARDS

Outstanding Chapter Award 2018, and the winners are:

GOLD Plaque - IEEE NSSCE PES Chapter, Palakkad

SILVER Plaque - IEEE CEC PES Chapter, Chengannur

BRONZE Plaque - IEEE CEK PES Chapter, Karunagapally

A large, stylized green leaf graphic is positioned in the background, extending from the bottom left towards the top right. It consists of several overlapping leaf shapes of varying sizes and orientations, creating a sense of growth and movement.

OUTSTANDING STUDENT VOLUNTEER AWARD

IEEE PES Outstanding Student Volunteer Award 2018 was shared by Mr. Abhinav Rajeev (NSS College of Engineering Palakkad) & Mr. Vishnu Vijay Pillai (College of Engineering Chengannur)

IEEE High Performance Student Branch Chapter Award 2019

IEEE Students Branch of College of Engineering Karunagapally have earned the wing of 2nd Global Position on IEEE High Performance Student Branch Chapter Award .

IEEE Students Branch of NSS College of Engineering Palakkad have earned the wing of 14th Global Position on IEEE High Performance Student Branch Chapter Award .

LARGEST PES CHAPTER

College of Engineering, Chengannur has attained the top position as the Largest PES student branch chapter with membership count 394.

PES One-on-One

'A leader is one who knows the way, goes the way and shows the way'

John c Maxwell

The most awaited event of IEEE PES Kerala section, "PES one on one", the chairs meet came to reality on 7th April 2019. The event was successfully hosted at Model Engineering' college ,Thrikkakara with 48 members from different student branch across Kerala. The set of speakers was the main attraction of the day. As every program starts with silent prayer, the event too took of its journey with the prayer. Later moved on to the internal sessions with the welcome speech and IEEE code of ethics by Er.Anandhu S Kumar, student activity coordinator, IEEE PES Kerala chapter, a vibrant volunteer who is a motivation for many. Then moved on to the presidential address by Prof. Shobha Manakkal, vice chair IEEE PES Kerala chapter.

One of the most prominent attraction of the event, the session by Mr. Suhair ,chairman IEEE PES Kerala chapter, on PES Kerala chapter goals 2019 and SB chapters .The session successfully travelled through the IEEE and PES. It pointed out the main aspects such as need for technical knowledge the necessity to acquire it, the healthy sides of networking and the various benefits one could attain from the PES. The session was intact a good one that everyone could analyze and enrich them with the need of technology and technical skill

The other one attraction was the session held by Shobha Manakkal where she shared her view on how to utilize the opportunities in PES to excel in academia funding sources for a academia project or initiatives (MDI, IPISA). The session was completely packed up with knowledge and were very interesting and held up the listeners till the end. The session by prof Nandan ,chair student activity committee clearly explained and took a detailed class on the roles of student leadership team between student

branch and society chapter and the value of ethical volunteering. The session was too good that one could clearly understand how a perfect volunteer should be. That was the end of the morning section.

The noon session started off with Prof Sunil Paul, CEO Shristi Robotics who just created a live session on creating an environment of R&D in student branches / chapters. It was fully engaging and no one could even get distracted from it. The last but not the least was the session held on reporting by Anandhu s Kumar who explained up each and every details the SB reporting PES Kerala Newsletter, HPSBCP and vtools .The seasons was such a one that even a beginner could easily understand the basic reporting manners and styles to be followed.

The overall event was a fruitful one in molding up of a leader who could guide in front with full dedication. It was always the duty of the leader to get his people from where they are to where they have not been.



AKPESSC '19



The Power and Energy Society Kerala Chapter in association with College of Engineering Karunagappally, hosted its most prestigious event All Kerala Power and Energy Society Students Colloquium (AKPESSC_19) on 23-25 August 2019.

The three day event aimed at the technical moulding up of students to make them more skill Oriented and the Colloquium succeed in completing it's mission.

Day 1

The first day started off with the inauguration ceremony. The code of ethics by Mr.Akshay Krishnan, chairman IEEE SB. Dr Jaya VL, the Principal of College of Engineering Karunagappally delivered the welcome speech were she wholeheartedly welcomed all the respectable dignitaries, delegates and volunteers to the dream event. Later on moved to the core attraction of the event, the lamp lighting ceremony, the lamp of enlightenment was glowed up by the respectable dignitaries. The honorable guest of the event Shri. S Somanath, Director VSSC Thiruvananthapuram, went on with his inaugural speech. The chairman of

Centre for Environment and Development Prof. V K Damodaran greeted the audience followed by Er.Suhair A K, the chairman of IEEE PES Kerala Chapter, Dr.Ing Peter Magyar, the past chairman IEEE IAS CMD and Er.Haseena P V, advisor of IEEE PES SB CEK delivered their felicitations. Mr. Hari Prasad, chairman PES IEEE SB CEK delivered the vote of thanks. Outstanding Volunteer Award:- Mr. Biju K (EEE department CE Munnar)



Outstanding Engineer Award:-Prabin James(Asst prof Vimal jyothy College of Engineering) 3.Outstanding PES student chapter

Gold:- NSS college of Engineering palakkad
Silver::- College of Engineering Chengannur
Bronze:- College of Engineering Karunagappally

4.Outstanding PES volunteer Awards:-

- Mr. Vishnu Vijay Pillai(College of Engineering Chengannur)
- Mr. Abinav Rajeev(NSS college of

Engineering Palakkad)

5.Outstanding Counselor Award:- Er. Raju Manuel(former counselor IEEE SB CEK)

6.Special Award:- College of Engineering Karunagappally(Organizing LUXATHON 1.0)

The talk by Shri S Somanath, Director VSSC Trivandrum, the chief guest about Chandrayan 2, the second lunar exploration was an interesting one that drew the attention of many gathered there. He shared his experience that helped him to workout over there, adding more effect to the talk. The session by V K Damodaran, chairman of Centre for Environment and Development, on the "Industrial Revolution" was another gain for the delegates. His travel through the advancements in industries helped them to realise what they need to do to build up a technically equipped society. Another session of the day handled by Er Suhair AK ,the chairman IEEE PES Kerala



a technically focused society.

The industrial visit to the Indian Rare Earth limited, they demonstrated mineral extraction process. The visit was informative and exciting. The NSS College of Engineering Palakkad, shared their experience and explained up all the journey



,the hardwork and all that helped them to reach out that height.



Day 2

The line of workshops on the most sensational topics of the current generation we're conducted.

1.IMAGE PROCESSING

The workshop on "Image Processing" by Remya

Chapter explained the benefits of PES, the needs and relevance of being a member of such

R S, Assistant professor CS department, College of Engineering Karunagappally really poured up the knowledge to the attendees. She explained the vast areas of image processing, made an exposure of analysis and manipulation of digitalized image. The 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 and a workshop on such a thing was indeed a most relevant one.



the responsibilities of a good volunteer towards a perfect society, what they should really focus upon. The session by Prof. Deepa AK, WIE secretary IEEE Kerala chapter and Er. Staji Wilson, Young professional IEEE Kerala Chapter on "How to write technical papers" and "IEEE opportunities and leadership" respectively was really the informative one where both guided the delegates and dug up the hidden strength in them.



2. ENERGY METER

The hands-on session by Mr. Nasarudeen, United Electrical Industries Limited on "Energy meter" was an effective workshop that could build up a knowledge on technical side. The session delivered detailed knowledge regarding energy meter's working, application utility and all. The workshop on such a object in this energised world was more useful.



The main attraction of the day the "Smart Energy Hackathon", grabbed innovative ideas from twelve teams, to prevent electrical theft which is a major issue seen in now-a-days. From 12 ideas presented by each group, one was titled the best which is a contribution from Revathy J H and Hasna M Rafi (CET) Hannah Ann Mathew and Kallu Sudarsan S S (RIT) Jishnu PC, Aneeta Bino Joseph, Jeswin Leo Sabu, Madhukrishnan AP, Eldhose Mathew Vinay VA from CETkr, YCET, VJCET, JCET, MBCET and Vidya Academy of science and technology.

3. ELECTRICAL SYSTEM PROTECTION

One in three, the last one was on the array of workshop was on "Electrical System Protection" by Jagannathan C, a branch of Electrical Power Engineering that deals with protection of electrical system from faults through disconnection. The workshop was such an effective one so that in the world of power everyone could really work in accordance with the necessity of Protection of electrical system.

The other sessions on the event was "How to be a good volunteer" by Nandan S, chair SAC Kerala section was an interesting one. He explained all

Day 3

The final day of AKPESSC'19 cracked the expectation of delegates with the session by Dr. Ing Peter Magyar, the past chairman IEEE IAS CMD where he motivated the aspirants through his journey. He made a route to the students and professionals to the vast opportunity that industrial applications society provides. His presence was such a great honour for the event. The Young professional interaction on the final day laid up a foundation for all the delegates



journey and thoughts, about “ Higher Education Career opportunities”. He was really meant to inspire and he did it well. Adding more value, there was a session by Er.Shyam Pradeep Alil, entrepreneur and YP volunter, IEEE Kerala Chapter on “Entrepreneurship”, no one more than



Later the event went on with the presentation by Power and society Student Chapters on Kerala on smart city. The team of Rajiv Gandhi Institute of Technology kottayam travelled through what are smart cities, how to build them and the standards to follow. Energy Management in smart cities has explained by College of Engineering Trivandrum. The team of Federal Institute of Science and Technology has gone through the scarcity in kochi and Trivandrum and how smart they are. A quick of 100 smartcities in India has been presented by NSS college of Engineering palakkad, and the session had ended by presentation by SCT college of engineering pappanamcode on smarty Global Models to follow. An interactive session by the Er .Suhair AK, chairman IEEE PES Kerala Chapter and Student Branch Chapters followed the presentation where each and every loopholes on smart cities have been discussed.

him can drag you to the peak of the field.

The NSSCollege of Engineering,Pallakad gave a break to the series of AKPESSC by hosting the promotional video of XPIRYA,a new technical Celebration.



Mr Sathish , scientific officer at Kudamkulam Nuclear Power plant has taken a session on “Power transmission and opportunities in power transmission at nuclear power plant”, has demonstrated the working of kudamkulam Nuclear Power plant. The images and videos he showed inspired the students and he conveyed the opportunities they provide to young engineers.

AKPESSC'19 really did what it meant and was in tact the most successful event for the year 2019 with all the technical package that could moluld up a skilled one to the society.

The young Professionals of PES Kerala Chapter Er.Anish MS, carried the delegatethrough his



How to Execute Successful B-Tech Projects 2.0

“How to Execute Successful B.Tech Projects 2.0” workshop was organized on 22nd September, Sunday, by IEEE PES Kerala Chapter, in association with IEEE PES RIT Student Chapter as a sequel to a highly successful session conducted the previous year. The session was aimed at giving students more clarity on the topic on which to base their crucial final year project and how to execute it using the proper steps.

Inaugural Ceremony

The inaugural session commenced at 10 o'clock with Mr. Harilal Bhaskar, CEO of Atal Incubation Center at IIIT, Kottayam as the invited chief guest. The welcoming address was given by Dr. Prince A, PES RIT student branch Chapter advisor from the EEE department, followed by a speech by Dr. Jalaja M J, the Principal of RIT. The chief guest addressed the participants soon after. Mr. Biju K, IA/IE/PES joint secretary welcomed the faculties to the event and familiarized the crowd with their credentials and years of experience in their respective fields. The felicitation was given by Mr.

Boby Philip, PES Kerala Chapter secretary. The inaugural ceremony was closed with the vote of thanks given by Shahnaz Fathima, IEEE RIT SB PES Chairperson.

Following the ceremony, the participants were directed to their respective workshops. Separate sessions were conducted parallelly for the four different branches (CS, ME, EC, EEE) in different classrooms. The faculty speaker of each session passed on valuable advice on how to choose the most relevant topic and carry out the project. The speaker for the ECE Workshop was Dr. M.V. Rajesh, Associate Professor at Model Engineering College. The ME Workshop was headed by Prof. A.K. Madhu, Assistant Professor at College of Engineering, Adoor. The speaker for the CSE Workshop was Dr Binu V.P., Associate Professor at College of Engineering, Karunagappally and the EEE Workshop was Dr. Dinesh Gopinath, Associate Professor at College of Engineering, Thiruvananthapuram. Tokens of appreciation and certificates were given to all the faculties by Mr. Boby Philip and Dr. Prince A respectively.



lighting the lamp ceremony.

After a round of refreshments, the preliminary written exam was held. Participants were given 30 minutes to answer 60 questions. Divisions for the questions were as follows :-

1. Power & Energy: 20 questions
2. About Kerala: 10 questions
3. General Knowledge: 15 questions
4. Current Affairs: 15 questions

After the written exam, Er. Suhair A K gave the participants a motivational session, elaborating on the path to success to be an efficient engineer and how IEEE is an excellent platform providing opportunities to network, improve leadership qualities, stay updated with technology and many more opportunities for young students to grow into successful professionals. Lunch was provided to both the participants and parents that accompanied them. Mr. Gitin Jacob, 2016-17 IEEE RIT SB Chairman, spoke with the participants on the importance of the IEEE Society and how it helped him.

PES QUIZ 2019

IEEE Power and Energy Kerala Chapter in association with IEEE PES student branch Chapter of RIT conducted the final round of the tenth edition of the all Kerala quiz event titled "PES Quiz 2019" exclusively for first year students, on 26th October 2019 at Rajiv Gandhi Institute of Technology Kottayam from 09:00AM to 04:00PM. It was conducted as a part of IEEE Day 2019. 85 students from all over Kerala participated in the event. Dr. B Premlet, chairperson for the educational activities of Kerala Section, was invited to be the Quiz Master.

The inaugural ceremony of PES QUIZ 2019 commenced at 10:15am with the recitation of IEEE Code of Ethics by Abhijith K (Chair, IEEE SB RIT) followed by welcome address by Anupriya B (Secretary, IEEE PES SBC RIT). The presidential address was given by Dr. Jalaja M J (PRINCIPAL RIT). She inspired the first year engineering students with her words on the role of an engineer in the society. Followed by Inaugural Address by Er. Suhair A K (Chair, IEEE PES Kerala Chapter). He talked about the principles and ideals behind the PES Chapter and the importance and benefits of events like PES quiz in the life of aspiring engineers. Er. Harikumar K P (Kerala Execom Member) delivered the felicitation followed by the felicitation by Prof. Anu George (IEEE SB Counsellor). Shahnaz Fathima (Chair, IEEE PES SBC RIT) delivered the vote of thanks. The Inauguration was carried out with the



The winners of the preliminary written exam were announced, and they were grouped into five teams for the next final round, handled by Dr. B Premlet. Winner and runner up from each of the Hub were made into teams of two constituting three of the five teams. Rest two teams were grouped with the remaining four top scorers from the participants.

Hub Level Winners from all the three Hubs were awarded Rs. 1000

Travancore Hub

Topper - Naveen James Tomy, College Of Engineering, Kallloopara

Runnerup - Sreyas S K, College of Engineering, Kallloopara

Kochi Hub

Topper - Muhammed Jasir T H, Model Engineering College

Runnerup - Vinayak Biju, Vidya Academy of Science & Technology

Malabar Hub

Topper - Abhishek Bhaktha K, GCE, Kannur

Runnerup - Sivaprasad K L, NIT, Calicut

The final section of the quiz was exciting and lively, conducted in seven rounds by the quiz master Dr. B

Premlet. Results of the finals were announced, and were as follows:

1st Prize - Awarded Rs. 5000

Muhammad Basil V, NIT Calicut

Adarsh Vijay K S, SCT College of Engineering

2nd Prize - Awarded Rs. 3000

Muhammed Jasir T H, Model Engineering College

Vinayak Biju, Vidya Academy of Science & Technology

3rd prize - Awarded Rs. 2000

Naveen James Tomy, College Of Engineering, Kallloopara

Sreyas S K, College of Engineering, Kallloopara

All other participants were given a participation certificate.

The program ended with a felicitation session handled by Prof. Anu George (IEEE SB RIT Branch Counsellor). Tokens of appreciation were given to all the esteemed guests.





TECHNICAL REVAMPING INITIATIVE ASPIRED CONCOURSE(TRIAC)



Technical Revamping Initiative Aspired Concourse (TRIAC), the technical event organized by IEEE PES, IEEE IA/IE/PELS Jr. and IEEE ComSoc Kerala Chapters along with IEEE FISAT SB was conducted on the 26th and 27th of October 2019 at Federal Institute of Science And Technology, Angamaly with a total participation count of more than 200 delegates

from across the various engineering colleges of IEEE Kerala Section. The event successfully launched a pattern of a one- day workshop covering the basics followed by a hackathon to assess the learning process of the past day.

The event was blessed with the presence of Dr.Usha Titus IAS, Principal Secretary, Higher Education Department as our Chief Guest. The workshops held were “Vitantu Sanchara” - Wireless communication, “Saurorja” - Solar, “Prathijwal” - Illumination and “Yantra”- Robotics. The resource persons who handled the workshops and hackathons , Dr Gandhiraj and Mr Shankar Jayaraj (Vitantu Sanchara), Mr Abhinav Rajeev and Ms Athira M (Saurorja), Mr Hari Prasad and Mr Akshay Krishnan (Prathijwal), Er. Anish Mohan and Ms Sajna Mohammed (Yantra).

Apart from the workshops, the first day evening session of the event witnessed a panel discussion by IEEE Young Professionals. The panel included Er. Akash P Nambiar (YP and Advisory Committee Member, IEEE FISAT SB), Er.Anandhu S Kumar (Student Activity Coordinator,IEEE PES Kerala Capter ,SB Chapter Coordinator,IEEE IA/IE/PELS Jt.Chapter Kerala), Er. Anish Mohan (IEEE PES YP Coordinator), Er.Shyam Pradeep (IEEE PES YP). A managerial session was handled by Akash P Nambiar,YP.

INAUGURATION

The inaugural ceremony of the event began at 10 am on 26th October 2019 with the IEEE Code Of Ethics followed by prayer to invoke blessing of the almighty. Dr. Usha Titus IAS, the Guest of honour officially inaugurated the event by lighting the lamp and addressed the gathering with an informative speech on the current scenario of job market and the government strategies for improving employability of the youth. Dr George Issac (Principal, FISAT) delivered the welcome speech. The presidential address was delivered by Dr Paul Mundadan (Chairman, FISAT). The ceremony was felicitated by Dr. Bobby Philip (Secretary, IEEE PES Kerala Chapter). The ceremony was also blessed with the presence

of dignitaries such as Dr C Sheela (Vice Principal, FISAT), Er. Anandhu S Kumar (Student Activity Coordinator, IEEE PES Kerala Chapter ,SB Chapter Coordinator, IEEE IA/IE/PELS Jt.Chapter, Kerala), Mr Nebic Johnson (Student Representative, IA/IE/PELS Jt. Chapter Kerala). The vote of thanks was delivered by Ms Abhirami K S (Chairperson IEEE FISAT SB). The ceremony wrapped around 11 am with the National Anthem.

YANTHRA - Workshop and Hackathon

Yantra workshop and hackathon was conducted as part of TRIAC handled by Er. Anish Mohan and Ms.Sajna Mohammed. The workshop covered portions of basic robotics using Arduino. The session included familiarization of components, assembling of parts and programming. About 51 participants attended the workshop.

Day 1: The workshop session began at 9 am and the first segment was a brief introduction to robotics and basic components. Arduino was the main discussion point. Functions, parts, circuits and programming using Arduino were also discussed. The second and the third segment had discussions on circuits and functions using these components and the final segment was the combination, logic circuits and its functions.

Day 2: The hackathon, which began at 9 am, was the most interesting part for all delegates. They used their ideas, skills and knowledge from the session with the help of the instructor and created their own robots. Overall the workshop was useful and enjoyable for all delegates.

SAURORJA - Workshop and Hackathon

The workshop SAURORJA base on solar panel system was run by Mr.Abhinav Rajeev and Ms.Athira M from NSS College, Palakkad. The Workshop was conducted at the Electrical Lab. 50 delegates attended this workshop.



DAY 1: The workshop was started at 9 am with some introduction on basic electrical appliances such as wire, batteries, controllers, etc. And the delegates were able to understand and elaborate their ideas. Later on they were introduced to the basic components required to set up a solar panel, its working, the various criteria for selecting these components, its market price and so on. It gave out a clear cut idea about how to design a Solar Photovoltaic System based on the consumer requirements. The lecture was supported with attractive presentations. The mentors introduced how to use all these components in a solar panel. Delegates were able to do some experiments on solar panel. The first day workshop session ended up with an experiment to check the efficiency of a solar panel under shady conditions. The workshop was pretty interactive session and the mentors were very free to clear the doubts during the workshop.

Day 1: The workshop started at 9am with the introduction to properties of light. The workshop syllabus included primary properties of light like intensity, wavelength, frequency, polarization, unit of luminescence (lux), its values for different applications, calculation of lux value and a few more related topics. The delegates were trained to use "DIALux" a software which is the one of the world's leading softwares for planning, calculation and visualization of indoor and outdoor lighting.

Day 2: The hackathon session started at 8:45am and extended to 4 pm in the evening. The delegates were able to calculate the lux value of a reading room using the DIALux software. Both the workshop and hackathon were very informative.

DAY 2: The workshop session started at 9 am. The session started up with new topic - PVsyst V6.84 (software). The venue of the session was at CCF Lab. There was a hackathon based on the workshop conducted on day 1. The delegates were able to apply what they have learned and all was well and good. Overall the workshop was understanding and applicable in practical life and enjoyable for all delegates.

VITANTU SANJARA- Workshop and Hackathon

A two day workshop-cum-hackathon on Software Defined Radio (SDR) for Academics and Research organized as a part of Technical Revamping Initiative Aspired Concourse-TRIAC at Federal Institute of Science & Technology on 26th & 27th October 2019.

PRATHIJWAL -Workshop and Hackathon

PRATHIJWAL, a workshop based on Illumination technology was handled by Mr Hari Prasad and Mr Akshay Krishnan, students from College of Engineering, Karunagappally. The venue for the workshop was the Central Computing Facility Lab, FISAT. A total of 75 delegates attended the workshop.



The session was handled by Dr Gandhiraj R, Professor, Amrita College of Engineering, Coimbatore and Mr Shankar Jayaraj, Secretary, IEEE ComSoc Kerala Chapter. 26 students from various colleges across the state participated for the workshop.

Day 1: The workshop started with the introductory session on Fourier transfer, time domain and frequency domain by Dr Gandhiraj R. This was followed by the familiarization of GNU radio software. How to form a signal wave form was identified. The later part of session involved the instruction of how to filter a signal & catch different audio frequencies. The session concluded by discussing how to filter a given input audio signal.



& separate the audio file & karaoke.

A project Expo was arranged by IEEE ComSoc Kerala Chapter to exhibit the works of students from College of Engineering Karunagappally, College of Engineering Chengannur, Rajiv Gandhi Institute of Technology, Kottayam and J a w a h a r l a l Nehru College of Engineering Palakkad.

The event concluded with a feedback and review session on the second day evening where in a lot of positive responses and appreciations were received from the delegates towards the organizing team of the event. The volunteers' works were immensely appreciated and the delegates were fully satisfied from what the TRIAC Team delivered. They were able to learn and showcase their technical skills and the event ended up with flying colours

Day 2: The second day consisted of a session on Software Defined Radio, Satellite Tracking and Amateur Radio Communication by Mr Shankar Jayaraj. The hackathon began at 10 am, aim which was to test the workshop knowledge gained by the delegates. The task given to them was to take a song of their choice



A Cup of Tea with

Dr. Sivaji Chakravorty



post-graduation according to their interests and passion. Students freely interacted with the distinguished guest. It was truly an enjoyable evening. Prof. Sunitha and Prof. Bijuna presented mementos to Dr. Sivaji Chakravorty on behalf of the organizers.

IEEE Power and Energy Society Kerala Chapter and LMAG organised “A cup of tea with Dr. Sivaji Chakravorty”, the Director of National Institute of Technology, Kozhikode at Vakkom Moulavi Foundation Trust on November 30, 2019. The participants were leaders of PES Student branches across the State. Professor Sivaji shared his vivid experiences in the course of his engineering career inside and outside the country. He pointed out the importance of time management, punctuality and a sense of direction in life. He asked the students to cultivate the habit of reading. He mentioned that both unemployment and under employment are global phenomenon and Kerala is not an exception. He told that curriculum developers should concentrate on providing basic foundation in an undergraduate programme and should ignore the complaints of some industries regarding the employability of students. The industries must train the freshers after recruiting. He said that discipline is the most required character in an individual and advised the students to pursue



EVOKE 19

The inauguration of the summit took place in the college auditorium on 1st February, 2019 at 10 am. The proceedings began with the principal, Dr. S.Ayoob addressing the audience. The summit was inaugurated by Dr. Saji Gopinath, CEO of Kerala Startup Mission and Mr.Satish Babu, chair of APRALO-ICANN and the President of InApp Infotech. Over the course of next two days, a plethora of events were organised, including four workshops, seven cells, two mini workshops, coding competitions and informal events. A 24-hour hackathon was held, that focused on



green solutions for the problems of today, and was the highlight of the summit.

The second day of Evoke'19 kickstarted with 5 events happening concurrently around the college. 3 Workshops - Mixed Reality, Electrical Vehicle and Cyber Disease: Introduction to Ethical Hacking, a Project Competition cum Exhibition and the Paper Presentation competition started at 9 A.M.

The workshop on the futuristic technology of Mixed Reality was taken by Tiltlabs, the official Indian partner of Unity gaming studio. It was conducted in the FOSS Lab, and attended by 50 people. Prashanth Kumar, from Haritha Techlogix conducted the workshop on Electrical Vehicles in the Electrical Engineering Seminar Hall in which 60 people took part. The flagship workshop was the one on Cyber Disease - Introduction to Ethical Hacking. It was conducted by E. Rahul Naidu, from IIT Bombay, and had a whopping 100 attendees.

The Project competition had 12 participating teams, showcasing projects from colleges all over Kerala. There were some truly wild innovations like Organic Bandaging, Fusion 3D and a voting system that leveraged the emerging technology of Blockchain. The Paper presentation competition had various research papers shown at the Computer Science Seminar Hall. A mini-workshop was taken by Rahul Raj, from BIM Labs, Trivandrum. It focused on 'Sustainable Practices in the Construction industry'. Nishal S, also from BIM Labs, introduced students to 'MEP using AutoCAD', teaching them about 2D and 3D plans. The attendees got hands-on training and closely interacted with Mr.Nishal to enhance their knowledge.

The 24-hr Hackathon - "Hack-hazard", started at 10 A.M. UST Global, the international software solutions firm, organized the event. 10 teams put their brains to work a solution to the problem statement - "Technological solutions to Natural Disasters".

Various talks were also held throughout the course of the day. The first one was "Dreams to Fulfill - the Entrepreneurial Path", by Abhilash R, a well-known

serial entrepreneur. As the founder of She-Taxi, E-Toilet, BloomBloom etc., shared his experiences and thoughts on how entrepreneurs are changing the world. Ajith Gopi, head of the Solar Power Plant Technical Consultancy Programme in ANERT, held a talk on “Renewable Energy and Energy Trends”. He emphasized on how Kerala is a prime location for utilizing renewable energy to meet our ever-growing demands. Dr. Sindhu Suresh, the recipient of the Edison patent award, held a talk on “Patenting and Research Opportunities”, by way of video-conference. She imparted valuable insights on starting off on the path of research and stressed on the importance of practical experience in becoming a qualified engineer. She also talked about the Impact Factor in research and how to convert research into market opportunities.

A Startup-Expo was held in the APJ Park from 10 A.M onwards. Ten Start-ups showcased their products and services in stalls. Many of them attracted students and attendees with their innovations. The virtual reality start-up Vrook and the art venture Krafty K, both held interactive sessions with everyone present.



Evoke'19 has pioneered the concept of 'CELLS' – an exclusive session that provides intensive interaction with experienced speakers. Four cells were held in different venues around the college. “Social Entrepreneurship” was taken by The Gulmohar Foundation. It focused on the concept of empowerment being more effective than charity in the realm of social work. A cell on “MEAN Stack” was conducted by Techlytx. The session focussed on the latest trends in web-development frameworks. Starting Trouble, a start-up which helps start-ups, held a cell on pursuing the entrepreneurial path and overcoming the difficulties faced therein. Aisha Nazia, an alumnus of TKMCE, held an interesting cell on the professional world. As a professional engineer herself, she imparted insider information that is worth more than any bookish knowledge.

The finals of 'Semicolon', the coding competition, was held in the Software & Networking Lab. The fourteen finalists hacked their way through, building up ingenious solutions to logical puzzles. Community meetups were held in the APJ Hall in the afternoon. Mehar from TinkerHub and Mufeedha from the PEHIA foundation held interactive sessions with attendees. It was held with a small crowd and individual experiences and stories were shared.

The day concluded with an interactive session between the students and renowned alumni of

TKM College of Engineering, who have made a difference and accomplished wonders in their respective fields.

The third and final day of Evoke'19 began on a positive note with a cell on Women In Tech by the PEHIA Foundation, which, as the name implies, focused on the increasing role women can have, and are taking, in the arena of technology. Collaboration is key for software development. Keeping this in mind, a cell on API and GitHub taken by Ms. Keerthana Gireesh was also conducted. Three workshops, namely, Mixed Reality, Cyber Disease and Electric Vehicle entered their second day. They picked off from the first day, continuing to teach the participants specialized knowledge, and augmenting it with a truly hands-on experience. Each of them had small projects or competitions, to help the attendees grasp the concepts taught and to learn to apply it. The Energy Auditing workshop began on the 3rd of February at the PTA Hall at 9 A.M. This was taken by K M Shanavas, and sponsored by the Kerala Energy Management Centre. Mr. Shanavas shared his expertise in the field, focusing on methods to conserve energy without reducing output, as well as utilizing eco-friendly methods of energy production.

Mr. Rejin Narayanan delivered a very informative and interesting talk on consumer robotics, which proved to be immensely useful to the participants. To add a bit of adventure to the tech-summit, an informal treasure hunt, which began at 10 A.M. was also included in the day's programme. The Ideathon competition focused on “Intelligent Energy Usage for a Greener Tomorrow”, which was in accord with the overall theme of the summit. Many interesting ideas were presented, like Saltwater Energy generation and Cams fuel. An interactive game session, 'AAVEGAME', was organized by the students of the department of Chemical Engineering. It proved to be an exciting experience for contestants and spectators alike.

The afternoon session kicked off with the Augmented Reality Treasure Hunt which offered the contestants an immersive experience into the realm of gaming. Mr. M. Krishnakumar, conducted a cell introducing the participants to the world of Hardware Product Development and Research, drawing on his decades of experience in the field. Emerging technology being a hotly discussed area, Mr. Gokul B Alex, the ambassador of ZCash and Hashgraph, gave an immersive talk on Blockchain and how it can be used for social impact and its potential for disrupting several industries.

The summit concluded with an Informals session, where students showcased their unique talents to entertain and engage crowds. Padma Shri Meenakshi Amma Gurukkal, showcased on stage a demonstration of the martial arts form Kalaripayattu, on stage. This was followed by a colorful Cultural night, where both the Music Club and Dance Club held everyone enthralled with their performance. Evoke'19 witnessed the coming together of some of the brightest minds in Kerala and stayed true to its theme, “The Dawn of Green Intelligence”. It marks the first step of TKMCE's transition into a truly 'Green Campus'.

SEEM SUSTAINABLE ENERGY COLLEGE LEVEL CHAMPIONSHIP

IEEE PES SBC MESCE conducted a Sustainable energy seminar competition in association with SEEM on 28th March 2019 at EEE Seminar hall.

It was a 20 min Seminar competition, 15 min for the presentation and 5 min for question and answering. It was conducted for all the departments.

A total of 5 teams participated and the winner was selected for the zonal level competition. The result was out in the end. A team of 3 led by Naseeba from EEE department was selected for the Zonal level competition.

The competition started at 2:30 PM and was concluded by the Advisor of IEEE PES SBC MESCE, Dr. Nafeesa K at 4:30 PM and 3 PES volunteers volunteered for the program.



MEETUP WITH PES KERALA CHAPTER CHAIRMAN

IEEE PES SBC MESCE held an interactive session with Er.Suhair A K, the Chairman of PES Kerala Chapter on March 22nd. The one-hour long session began at 4:50 PM. He reminded the PES members about their various responsibilities and commitments and how the members can reap the benefits in the future.



The session encouraged the volunteers and members to make good use of the wide array of opportunities they receive as PES members and also benefit the society through the collective efforts. Students asked their queries and doubts and Mr Suhair cleared the doubts perfectly . The session was very interesting and students shared their feedback about the session later on . The session went on for an additional ten minutes from the scheduled time and was wound up at 6 PM . The session ended with some of the delegates and volunteers sharing their feedbacks about the session.

ASIET PES CHAPTER INAUGURATION



On 26th April 2019, a distinguished lecture program was arranged by the IEEE student branch of Adi shankara institute of engineering and technology on "Radiation detection for international borders". This session was endured by distinguished guest Dr. Richard T Kouzes. He is the laboratory fellow at the Department of Energy (DoE'S) Pacific North west National Laboratory (PNNL) working in the areas of neutrino science , homeland security , non- poliferation , and computer applications . The welcome speech was given by Ms Sankara Nayaki , CS Dept. There were about 100 participants.

Along with this occasion , IEEE SB ASIET inaugurated PES and SPS Student branch chapters . This was offically done by Mr.Johny PA , he is an Engineering expert R&D / Engineering specialist , Planning & Performance Monitoring (P&PM) /TADD, Saudi Electrical Co-East Head Quarters, Dammam (APRIL 2011- december 2018). He is very active in conducting energy audits and power quality audits of Industrial, commercial & residential installations and preperation of reports.

The event was followed by inaugral speech of Chapter advisor Mrs gomathy Iyer, HOD, EEE Department. The execom panel was announced along with the year plan of PES CHAPTER.

The occassion was concluded on a very positive note with the IEEE SB Chairman Mr Dennies Rocky thanking the honorary guest,the dignitaries and the audience.



ONE DAY WORKSHOP ON E-MOBILITY FOR SMART CITIES & IEEE PES SBC INAUGURATION

E-Mobility for Smart Cities, the Second Workshop in the series of workshops on “Smart Cities” organized by IEEE Kerala Section, PES Kerala chapter, LMAG, Vakkom Moulavi Foundation Trust and SCTCE was held on 27th April 2019 at Sree Chitra Thirunal College of Engineering (SCTCE), Thiruvananthapuram. The inauguration of IEEE PES Student Branch Chapter was also held along with the workshop.

Inaugural Ceremony

The code of ethics was administered by Adith (Secretary, IEEE PES SCT SB) followed by the Welcome address by Dr Bobby Philip. The Presidential address was delivered by Prof. Prabhakaran Nair (Principal, SCTCE)

Prof. V.K Damodaran (Chairman, Centre for Environment and Development) inaugurated the workshop by lighting the lamp and spoke about the need to combat climate change and pollution and role of E-Mobility in it.

Er. Sarada Jayakrishnan (Vice Chair, IEEE Kerala Section) congratulated the college authorities for setting up a new PES Student Branch in the College. She said PES is the most vibrant branch in the Kerala Section. She briefed about the glorious works undertaken by the Section and PES Chapter. She invited students to be part of the Tencon Conference in October 2019 in Kochi. The formal inauguration of the PES Student Branch Chapter, SCTCE was done by her.

Er. A. Suhair (Chairman, IEEE PES Kerala Chapter) in the felicitation speech reflected on the importance of Big-data Analysis, processing and fast communication and variety of for smart cities. He also mentioned that the PES Chapter will involve student community to study various aspects of the Smart Cities which will be reviewed and consolidated as a report to IEEE and policy makers.

Er. Hareendralal (Chairman, LMAG) spoke on the increase in urbanisation and the need for use of public transportation by all. He also quoted PES Kerala Chapter is the largest PES Chapter in the world.

Prof. Shobha Manakkal (Vice Chair, IEEE PES Kerala Chapter) addressed the

students on Student Branch activities. She also quoted that, ‘A Country is rich when a rich man uses public transport.’

The Vote of Thanks was delivered by Prof. Deepa A. K (Staff Advisor, PES Student Branch Chapter and Secretary, WIE Kerala Section) concluding the inaugural ceremony.

The Keynote address was delivered by Dr T Elangovan (Executive Director, Kerala Road Safety Authority). He introduced the concept of “Smart Mobility” and discussed the plans for implementing Smart Mobility in Trivandrum city which included the provision of high-class bus stops with facilities like drinking water and toilets, Intelligent Transport Solutions, Mobility Planning, and last mile connectivity. He said the focus should be on moving people rather than movement of vehicles. He also urged the implementation of various traffic management measures like carpooling/ride sharing, bus priority scheme e.t.c.

Dr Suraj Soman (Scientist, CSTD, CSIR-NIIST, TVM) provided insights on “Self-Powered Smart Cities” and its current situation in India. He said we need to make it smart and sustained. He went through the evolution of connected devices, industrial revolution and IoTs. He also pointed to the fact that dumping the old batteries will inturn increase the carbon footprint. He urged the use of DSCs (Dye-sensitized Solar Cell) in a lot of scenarios even as window replacements. CSIR is indigenously developing a DSC PV Module.

Dr Sreedevi B.G (Chief Scientist, NATPAC, Trivandrum) explained the Kerala State E-Vehicles policy and its current progress. She explained the three pillars of sustainability, virtuous cycle, Govt. of India’s Initiatives, EV Policies in other states. She explained the Vision as creating more opportunities around Power Electronics and Key Policy Drivers in Kerala’s EV drive. She also talked about managing the e-Grid, upgrading bus transport fleets and Industrial Growths.

Dr Chandrashekar, from C-DAC, Trivandrum spoke on “Electric Vehicles- Charging Infrastructure”, its need and the issues related to its implementation in Kerala. Experts form Smart City Thiruvananthapuram Ltd presented on the current progress of the Smart City Project.

Prof. Bijuna Kunju K, and Research Scholars from TKM College of Engineering, Kollam discussed their research on Electric vehicles. Prof. Prakash. U spoke on “Hybrid vehicles” and conversion of existing IC Engine Vehicles to E-Vehicles. Prof. Chitrakumar V.K led a small discussion on different perspectives of “Transformation to E-Vehicles”.

The valedictory function was held, marking the end of the workshop. Er. M Sivashankar IAS, Secretary to the Govt. (IT) and OSD to Chief Minister, was the Guest of Honor. Prof. V.K Damodaran delivered the Welcome speech, followed by the valedictory address by the Guest of Honor, where he shared about his passion on E-Mobility and Electric Vehicles. The IEEE PES Awards for Excellence from HQ were distributed to the award winners. Er. K. R. Venugopal received the Outstanding Engineer Award. Prof K. Biju and Prof Prabin James could not be present to receive the awards. The Presidential Address was delivered by Prof. Prabhakaran Nair.

Er. A. Suhair then addressed the gathering. The Vote of Thanks was delivered by Prof. Reshmi Krishnan S.

The participants found the workshop very informative regarding the goals and progress towards achieving E-Mobility.



SEEM SUSTAINABLE ENERGY ZONAL LEVEL CHAMPIONSHIP

ZONAL LEVEL OF SEEM SUSTAINABLE ENERGY CHAMPIONSHIP was held at MESCE in association with IEEE PES SBC MESCE on 25th of June 2019 at EEE seminar hall.

The winners from different colleges including our college participated in the competition.

There were three judges from different colleges.

The competition started at 10AM with the presence of Dr. Nafeesa K, the Advisor of IEEE PES SBC MESCE. A total of 5 teams participated from different colleges including ours. It was a 30 mins presentation including question and answer session. The vibrant students made the competition tight. It was a tough task for the judges to determine the winners. Still the result was announced in the end. A team of 3 from our college, MESCE Kuttipuram was selected for the next level. The competition was concluded at 12:30 PM. 4 PES volunteers volunteered for the program.



Inauguration of the First Year B.Tech Batch of Students of Kottayam Institute of Technology and Science (KITS), Kottayam



PES Kerala Chapter Chair Er. A.Suhair participated in the inaugural function of the First Year B.Tech Batch (2019-2023) students of Kottayam Institute of Technology and Science. He spoke on how IEEE and PES can help them stay tuned with technological advances and groom them as leaders

and communicators. Students have to build the power of observation and connect technology with growing societal needs. Large number of students, parents, peoples' representatives and representatives of college management and faculty attended the function.

MARIAN PES CHAPTER & VIDYUTH 2019 INAUGURATION

The IEEE PES student chapter and VIDYUTH 2019 (Electrical and Electronics association, Marian Engineering college) was held on 22nd August 2019 at Benziger hall, Marian engineering college. Our Chief guest for the day was Shri. Suhair A K, Chairman IEEE PES Kerala chapter.

Our bursar Rev. Fr. Sudheesh, Manager very. Rev. Fr. Wilfred E, Director Prof. Tomy Michael, Principal Dr. Ruby Abraham, Hod Dr. Vijayalekshmi S, Vidyuth Coordinator Mr. Sujith Kumar A. S (AP EEE) were present.

The welcome address was proposed by Anish A. Kumar, IEEE PES SBC chair and annual report and year plan was proposed by Jasmin Shanavas IEEE PES SBC V chair. The VIDYUTH 2019 logo was released by chief guest Shri. Suhair A K and the activities for

the year 2019 were officially inaugurated.

Badges of honour were given to the stakeholders of VIDYUTH 2019: Manu M (VIDYUTH 2019, President), Maheen A (VIDYUTH 2019, Secretary), Jayakrishnan G S (VIDYUTH 2019, Joint Secretary), Sandra Murali (VIDYUTH 2019, Treasurer) by chief guest Shri. Suhair A K.

The IEEE PES student chapter official site was released. The 3-phase regenerated certificates for the 1st and second prize holders for 6 different events namely treasure hunt, blow it or glow it, rubix cube, touch me not, circuit drawing and circuit debugging were given. After the refreshments there was a small interactive session with chief guest Shri. Suhair A K, Chairman IEEE PES Kerala chapter.



Distinguished Lecture Program (DLP) on Power System Overvoltages and Insulation Coordination

Department of Electrical and Electronics Engineering, IEEE SB, and PES SBC of SAINTGITS College of Engineering in association with PES Kerala Chapter, organized a distinguished lecture program on the topic "Power System Overvoltages and Insulation Coordination" on 16th September 2019 from 9:30 am to 11:30 am. Dr. Sivaji Chakravorthi, Director, National Institute of Technology, Calicut was the distinguished speaker for the program. Mr. A. K. Suhair, Chair PES Kerala

Chapter has addressed the gathering. Dr. Pinkymol K P, PES SBC advisor welcomed the participants of the program and introduced the speaker to the audience. Dr. Sivaji Chakravorthi gave a two-hour lecture on the classification of overvoltages and insulation categorization. Er. Abraham George, Counsellor, Student Branch proposed the vote of thanks. As a token of gratitude, Dr. M D Mathews, Principal, SAINTGITS College of Engineering handed over the honorarium to the distinguished speaker.

Gandhi Global Solar Yatra



Mahatma Gandhi believed that 'Nature can satisfy each one's need but not greed.' In the current scenario, the natural resources have been over-exploited while the benefits reaped from these resources do not reach everyone. Sustainable Development Goal (SDG) 7 calls for ensuring the access to affordable, reliable, sustainable and modern energy for all. However, still, more than 1 billion people lack access to electricity while an estimated 2.8 million people lack access to clean cooking fuels. While atmospheric CO₂ concentration has increased substantially due to the increased use of fossil fuels owing to energy demand

sure, which has made the world already hotter by nearly 1°C.

PES Kerala Chapter was a partner in the Students Solar Ambassador Workshop organized on 2nd October 2019 at Mohandas college of Engineering and Technology in association with IIT Bombay and IEEE PES MCET chapter along with more than 1 Million students globally . Around 80 students attended the workshop under the leadership of Prof. Rahul R S. The training was given by Adhithya Krishna R S, Parvathy Balachandran and Aravind V S (S7 Electrical & Electronics Engineering) who have completed their training from IITB

TRIAC: PES YP Panel Discussion



As part of Technical Revamping Initiative Aspiring Concourse (TRIAC), IEEE Power & Energy Society (PES) Kerala Chapter organized a panel discussion with PES Young Professionals for delegates from various colleges.

The panel was comprised of Er. Anandhu S Kumar, Er. Anish MS,

Er. Shyam Pradeep Alil & Er. Akash P Nambiar. Each panel member shared their experience in the industry as well as in IEEE. They also shared how IEEE membership benefits after college. After this there was a doubt clearance session for delegates. Delegates used this opportunity to clarify their various doubts about IEEE.

Empowerment Programme for Women on Home Electrics



Women are generally a little hesitant to handle problems with electricity use at home or office, even in Kerala, where 100% literacy and 100% electrification have become the hall mark. With communication revolution running its round with smart phones in the hands of almost every citizen in our country, in places where a large number of powered devices rule the home front, women are in face-to-face contact with electrical and electronic gadgets - several times every day. Even minor complaints with these devices are attended to by electricians, technicians or wiremen who are too busy and costly to get on the site. If women and especially housewives (in Kerala, a good majority have undergone 12 years of formal education) can attend to these minor problems and with ensure electrical safety, it will help in the overall increase of productivity and well-being in the society.



With impacts of climate change severely impounding on the people of almost all countries and in particular Kerala, it has become necessary to conserve natural resources including energy resources, and follow a sustainable path to development. Toward this, people are to be sensitised and empowered to act with the right kind of knowledge in an understandable way in the local language. It is still better to demonstrate and give hands-on training for such tasks. However, in a State with the highest population density in India, it will be unviable

to reach every home, school and institution by even the largest team of volunteers who are experts in such matters.



The way out will be to train committed women volunteers as Trainers to propagate the message by training more women from different areas with the same knowledge and hands-on exposure. The need is more and urgent in interior areas of the State than in cities and towns. Therefore, Kerala LMAG of IEEE decided to organize a Trainer's Training programme of two days duration as a model activity that can be replicated by a number of other competent agencies to cover the entire State.



With the expertise and experience as well as the dynamism exhibited by the Kerala Section of IEEE and its LMAG, the course modules, content and tools required were decided by a team of Life Members and with the help of other

operational units of IEEE like YPs, PES, WIE etc.

Objectives:

1. Empower women to attend to minor defects in, and mal-operations of, smaller electrical installations at home and in the community.
2. Provide hands-on training for women, who have no background of formal education in electrical technology, for effective learning and to familiarise with house wiring, protection devices, electric shock prevention, work safety, circuit fundamentals, electrical trouble shooting, and experience in assembling LED bulb and tube light as well as simple circuits.

Technical knowledge was intended to be built up sequentially in stages and finally got tested through their involvement in hands-on activities. Thus, IEEE with its motto: "Advancing Technology for Humanity" and its Kerala Section consider it an honour to be able to serve the less fortunate sections of society with relevant technical knowhow. Most of the trainees (10 of 17) were either of Pre-Degree level, or Graduates in social science and history. Among the 7 nuns who attended, one is a young civil engineering graduate, and the others were school teachers or social work core team members or lead persons of the CMC social work initiatives.

Workshop on Geographic Information Systems Applications

An One Day Workshop on Geographic Information Systems fundamentals and applications in electric utility was conducted at the PES Student Branch, College of Engineering, Chengannur on 9 November 2019. The workshop was conducted by Er.Suhair, Chair, PES Kerala Chapter.

Participants also had opportunity to gain hands on experience in the afternoon session through QGIS, an open GIS software.





TECHNICAL TALK ON MACHINE LEARNING

Ms. Geethanjali Krishna, researcher from Sanford University, USA delivered a talk on Machine learning and Artificial Intelligence at Vakkom Moulavi Foundation Trust on 25th November 2019. She discussed the differences of machine learning and artificial intelligence and explained various applications. She explained the importance of Natural Language Processing in the development of AI discipline. It was an opportunity for students to understand the classification, collection and retrieval of data which enables the Machine Learning and Artificial intelligence. Engineering students and faculty from different colleges attended the programme. Er. Hareendralal, Chair LMAG introduced the speaker and Er. A. Suhair ,Chair, PES

INTERACTIVE WORKSHOP ON OVER-VOLTAGES IN POWER SYSTEM AND NON-INVASIVE CONDITION MONITORING OF TRANSFORMERS

Prof. Sivaji Chakravorti, Director, NIT Calicut conducted an interactive workshop for practising engineers from utility, industry and academia on two topics of great significance namely over voltages and insulation coordination and condition monitoring of power transformers. The programme was organized by IEEE PES Kerala Chapter and LMAG Affinity Group on 30th November 2019. The programme attended by large segment of KSEBL Engineers was inaugurated by KSEBL chairman Sri.N.S.Pillai. Prof. V.K.Damodaran introduced the speaker and the briefed the role of IEEE PES in the power sector. The presentations were followed by active question answer session.



NATIONAL CONFERENCE AND WORKSHOP ON SMART GRID TECHNOLOGIES APPLICATION & SIGNAL PROCESSING

The three day national conference on Smart grid technologies application & Signal Processing jointly organized by the Mohandas College of Engineering and Technology and PES Kerala Chapter was held from 18-20 Dec 2019 at the Mohandas College of Engineering and Technology



As the world is undergoing dramatic changes in the mode of power generation, transmission and distribution, smart grid is going to play an important role in mitigating the concerns about climate change, rising power demand and providing sustainable electric power for all.

The smart grid implementation requires intelligent interaction between the power generating and consuming devices that can be achieved by installing devices capable of processing data and communicating it to various parts of the grid. The efficiency of these devices is greatly dependent on selection and implementation of the advanced digital processing techniques.

Inaugural ceremony commenced by the welcome address by Dr Sheela S, Principal, MCET. Dr. Sobha Manakkal, Dean Academics MCET presented the importance of the program. Presidential Address was delivered

by Dr. Ashalatha Thampuran, Director, MCET. Inauguration of the event was done by Prof. V K Damodaran, Chairman, Centre for Environment and Development. Release of CD was done by Chairman, Sri G Mohandas, V.N. G. P Trust. Felicitations were done by Eng. A. Suhair, Chair PES Kerala Chapter and Dr R Ibrahimkutty, HOD ECE, MCET. The formal inaugural ceremony came to an end by vote of thanks by Dr Lathika B S, HOD EEE, MCET.

After the inaugural session, keynote address was delivered by Prof. V.K. Damodaran. In the afternoon session, by Prof. Shishaj P.Simson, Professor, NIT Trichy made presentation on 'Demand- Response under smart grid



environment' .

Day 2 started with Inauguration of workshop by Mr. Ajith Gopi, Programme officer and Technical consultant in Solar PV projects, ANERT, Department of Power, Govt. of Kerala .It was followed by a workshop on "Electric Vehicle Design and Future of Electric Vehicle Mobility" by Mr. Aravind Shivakumar, Product Experience Designer, ATHER Energy, Bengaluru and Mr. Krishnanunni J.S., IoT and Robotics Expert / EV Designer, Co-Founder & CTO, TEQZAP Future Tech Solutions Private Ltd.

The Impact of Climate Change on Coastal Regions



Dr. Sajitha Bashir, Adviser for Science, Technology and Innovation, World Bank, Washington delivered a talk on “The Impact of Climate Change on Coastal Regions” on 21 December 2019 under the auspices of Power and Energy Society, Kerala Chapter at Vakkom Moulavi Foundation Trust Hall , Thiruvananthapuram, Kerala. The presentation covered i) risks and vulnerabilities of climate change in coastal areas, ii) the steps taken globally, nationally and state level and iii) involvement of local communities in protecting coastal areas.

The speaker demonstrated evidence of climate change across the globe and high risks faced by India. The presentation emphasised that coastal settlements need to become more resilient and some districts of Kerala are highly vulnerable. She proposed citizen monitoring and involvement of local people in protecting the coastal areas and presented a model approach for Muthalapozhi Estuary in Kadinamkulam Lake of South Kerala. The discussion was organised by PES Kerala and LMAG The meeting was attended by students, youth volunteers, academics and local people. Er. A Suhair, PES Chair welcomed and introduced the speaker and Er. Hareendralal, LMAG Chair conveyed vote of thanks.

IEEE DAY PES QUIZ 2019

The purpose of the quiz is not to shame or embarrass anyone, but to make sure that everyone is on the same page.

To connect, to be in touch with the outfit of knowledge, the IEEE PES Kerala chapter organised PES quiz on all PES SB's all over Kerala, a way to measure their depth. The quiz was focused mainly on two dates 1st and 10th October 2019.

The preliminary selection round was done in respective colleges where the winners were selected and were given an opportunity to compete with all others selected from many colleges. The competition organised was with an aim to light up the fire inside the students so that they become more curious and start to explore the undefined sides of knowledge. The ultimate winners were selected from the final round and was awarded with prizes.

The colleges which conducted PES quiz on 1st October includes Vimal Jyothi Engineering College, CEK, Musaliar College of Engineering Chirayinkeezhu, LBSITW, College of Engineering of Adoor, LBSCEK.

The colleges which conducted PES quiz on 10th October 2019 includes NITC, NSSCE, College of engineering Trikaripur, MESCE, GEC THRISSUR, MEC, VJCET, RIT Kottayam, MBCET, SCT, MCET, TKM College of engineering.

IEEE PES Kerala chapter being a technical society it always focuses on strengthening the technical side and the chapter is organising each and every event making it as the key motive.



PES CHAPTER & EEE DEPARTMENT INAUGURATION LBSCEK

Once you make a decision, the universe conspires to make it happen.

The best such example was proven by the inauguration of IEEE PES SBC LBSCEK & EEE Department association on 14/11/19 which valued the hardwork and determination of many minds. The inauguration went on with various sessions which was another experience for all those gathered there. The welcome speech by Mr. Arun, EEE Department was the official walk in call for a crowd comprising 120 attendees. This was followed by Ms. Rajasree, HOD, EEE Department, & Ms. Mary Reena, Branch Counsellor, IEEE SB LBSCEK delivered the special address. Succeeding this inaugural address by Mr. Suhair A K, Chairman, IEEE PES Kerala Chapter. After this we had Smithamol, HOD, CSE Department & Deepna, Wip coordinator, IEEE PES Kerala Chapter, felicitating the occasion. The ceremony was concluded by Vysakh, Secretary, EEE association, delivering the vote of thanks.

Dr. Mary Reena KE, SB Counsellor was the lady in charge of introducing the PES team of IEEE SBC LBSCEK.

The strong wing of PES IEEE SBC LBSCEK headed by Deepna P(S7 ECE), chairman PES with the support of her team Anusree AN(S7 EEE), vice-chairman, Arjun K Nair(S3 EEE), secretary and Rinsha M P(S3EEE) as the treasurer.

The inaugural ceremony was followed by a talk on GIS by Mr. Suhair A K. He first explained how we can take up it as a project followed by the explanation of usage 3 symbols. This was succeeded by a demonstration of GIS.

Geographic Information System (GIS) is a system designed to capture, store, manipulate, analyze, manage, and present spatial or geographical area. GIS applications are tools that allow user-created searches, analyze spatial information, edit data in maps, and present the results of all these operations. GIScience mostly refers to geographic information science, the science underlying geographic concepts, applications, and systems. Since from the mid-1980s, geographic information systems have become valuable tool used



to support a variety of city and regional planning functions and came into importance.

GIS can refer to a number of different technologies, processes, techniques and methods. It is attached to many operations and has many applications related to engineering, planning, management, transport/logistics, insurance, telecommunications, and business. For the reason, GIS and location intelligence applications can be the foundation for many location-enabled services that rely on analysis and visualization.

GIS can relate unrelated information by using location as the key index variable. Locations or extents in the Earth space-time may be recorded as dates/times of occurrence, and x, y, and z coordinates representing, longitude, latitude, and elevation, respectively. All Earth-based spatial-temporal location and extent references should be relatable to one another and ultimately to a "real" physical location or extent. This key characteristic of GIS has begun to open new avenues of scientific inquiry.

Realising its importance and value, the session on GIS by such a prominent person like Mr. Suhair A K proved that he is a man who travel along with the updated technologies and a person who always search for the latest developments in the modern field. The attended were too impressed and satisfied with his work.

To conclude we had a doubt clearance session in which all students participated eagerly and was a platform for them to clear out all their queries and assumptions on GIS. After the session the softcopy of details required for making a project were shared which also was an aid to make their path easy.

The event when ended without any doubt it demonstrated that only

strong determination and dedicated minds are needed to set up something new which can alter the life of many with full spirit and

IEEE PES SBC LBSCEK is one such.



STUDENT BRANCH ACTIVITIES

SPECTRUM TALK ON FUTURE PROMISING NOISE CANCELLING TECHNOLOGY

On 21st February 2019, the IEEE PES SB Chapter NSSCE Palakkad has conducted a Spectrum talk on Future promising noise cancelling technology. The session was conducted with the aim that students come across the possibilities of the IEEE Spectrum magazine and they get acquainted to the upcoming technologies around them.

The session was conducted by Nayana CT, IEEE SB NSSCE member. In this modern world, Noise cancellation is an indispensable technology for mankind. Scientists have been working tirelessly to bring about innovations to this technology. One of those works was presented called the MUTE. This light weight earpiece technology promises to beat or meet the performance of the best premium noise cancelling headphones. MUTE leverages the not-so secret fact that the wireless network signals can travel one million times faster than the speed of sound. This amazing technology was innovated by Sheng Shen, a Ph.D. Student of Electrical and Computer Engineering University of Illinois, Urbana Champaign. He published his findings in the Spectrum of September 2018. Shen and his colleagues plucked the usually embedded microphones out of the earpiece to make MUTE with physically separated components connected through a wireless network. External microphones are placed closer to noise sources. Now anti-noise signals of the early reached noise signals are computed and hence the noise gets cancelled. The talk was concluded by an interactive session followed by the feedback of the listeners.



The students could know a new technology that has not yet reached the markets. The session made the students to think more on such ideas.

INTRA COLLEGE DEBATE COMPETITION



On 25th February 2019, the IEEE PES Student chapter of IEEE SB CETkr started the science week by organising a debate competition on 'Was the science in our high school useful or not'. The competition was moderated by PES Vice Chairperson Ms Anagha Ramesh who also started the program with an introduction speech. The participants were allowed to be free in selecting one of the two sides, i.e. for or against. The debate was competitive as each participant was encouraged for their pleasing presentation and sharp counter arguments. And also this revealed many aspects of the teaching system of our high school. The team that was against the topic won the debate and appreciated with small prizes for each participants. The program ended with vote of thanks delivered by Mr Jishnu PC, PES Chairperson.

SPECTRUM TALK ON QUANTUM COMPUTING



On February 26th 2019, The IEEE Student Branch of NSS College of Engineering conducted spectrum talk on "Quantum Computing". As most of the members were not aware of the theory of quantum computing, Solomon Staby, an IEEE S NSSCE member showed up to conduct a spectrum talk on the subject. The primary aim of the talk was to provide the basic knowledge about what is a quantum computer and how it works. About 53 members, including IEEE members and

non- IEEE members were present. There are still limitations for problem solving with a normal computer. At first, Solomon presented two relevant problems that cannot be solved by a normal computer. This is where a Quantum computer can play its role. The main advantage of this technology is speed. Quantum computer can solve problems which a normal computer cannot even think about. He explained what a 'Qbit' is and how it works with plenty of examples. There are still a lot of limitations for this technology to come into existence as its size is very large and it must be kept under a temperature of 15 millikelvins. The future scope of this technology was also discussed.

INTRA COLLEGE QUIZ COMPETITION



The PES Student chapter of IEEE SB CETkr as part of the PES week conducted a science quiz competition in the main seminar hall of our college at 12:30 pm. The competition was held in the presence of the IEEE SB CETkr Chairman Mr.Sreekesh E led by the PES Chairman of our SB, Mr.Jishnu P.C .Participants included students from different branches and they were given questionnaires containing questions covering different aspects of science.

SCIENCE AND ENGINEERING QUOTE CHALLENGE



On February 28th 2019, as part of "Science day celebrations" the volunteers of IEEE SB VJEC conducted a quote challenge. There were about 50 participants from different departments. The topic was Science and Engineering and the participants were asked to prepare quotes on the spot.

INTRA COLLEGE FILM REVIEW CONTEST



On March 2019, the PES student chapter of IEEE SB CETkr as a part of the science week conducted a film review contest in the main seminar hall of our college at 12:30 pm. The contest was conducted in association with the Friday film show by the Odessa Film Club of our college. The show consisted of two sci-fi short films of the famous sci-fi short film producer 'The Dust' and short films based on starvation and "karma". Each of the films were outstanding and revealed the probabilities of the AI expansion leading to the apocalypse, behaviour of man during starvation, etc. The participants were thrilled by the film and expressed their views and comments of the film in the reviews. The reviews were checked later on and Mr Sreeraj from S6 EEE got the 1st prize.

GENERAL SCIENCE QUIZ



On 28th February 2019, IEEE SB VJEC

in association with Go Green Club as a part of 'Science Day' Celebrations conducted a science quiz. The volunteers under the guidance of Ms. Lipina Gopal and Mrs. Ankita Sebastian organized the program. There were about 50 participants from different departments. The coordinators organized the events smoothly and was well cooperated by the participants.

KSEB SEMINAR SERIES



IEEE PES SBC MESCE conducted a KSEB Seminar Competition in association with KSEB Engineers' Association on 28th February 2019 at EEE Seminar hall.

It was a 20 min Seminar competition, 15 min for the presentation and 5 min for question and answering. It can either be presented individually or as a team of maximum 2 members. Four topics were given to the participants at the time of registration. The four topics included, 'IOT Devices-Implementation in power sector- Leveraging its benefits', 'Bigdata and its impact on power sector', 'Energy storage technologies- Future of utilities' and 'Integration of renewable's- Concerns and issues'. It was conducted for all the departments.

A total of five teams participated and the best two presentations were selected for the next round. Aadil Mohammed Mansoor, who presented the seminar for the topic, 'Energy storage technologies-Concerns and Issues' and Anees Rahman, for the topic, 'IOT Devices-Implementation in power sector-Leveraging its benefits' got the first and second prizes respectively.

The five member judging panel included three judges from KSEB Engineers' Association, Prof. Mridhula of Electronics and Communication Dept and Prof. Bobby of Applied Electronics and Instrumentation Dept.

SCI- FI MOVIE REVIEW CONTEST



On February 28th the volunteers of IEEE SB VJEC conducted a Science Fiction Movie Review Contest. The IEEE volunteers were shown a short film "Perfectly Natural" by Victor Alonso-Berbel as a part of Science Day Celebrations. After the movie presentation the students were told to write a review of the movie. There were about 30 participants.

A LOOKBACK AT SCIENCE AT SCHOOL



On 1st March 2019 the volunteers conducted a Powerpoint Presentation.

A Powerpoint Presentation was prepared by the IEEE SB VJEC. Several videos and talks were presented related to the basic sciences that were taught at school level.

PERIODIC TABLE CONTEST



On March 1st the volunteers conducted a Periodic Table Filling Contest. A Table Filling Contest was conducted in association with IEEE SB VJEC. There were about 20 participants from different departments. The significance of this event is that 2019 is a Year of Periodic Table.

SCIENCE LAW PRESENTATION CONTEST



On 11th March 2019 the volunteers of IEEE SB VJEC conducted a Science Law Presentation Contest. Students from different departments actively participated in the presentation contest and presented in the most creative and innovative way. Participants were asked to choose any Science Law on their own choice and present it in the best possible way.

NATIONAL WORKSHOP AT NIT CALICUT



IEEE Power & Energy Society student Branch NIT Calicut in association with Industrial Power Group, Department of Electrical Engineering and Robert Bosch and MathWorks organized a National Workshop on 'Delve into the future of Electric Vehicles' during 15th -16th March 2019. The workshop was aimed at helping students, faculties and experienced professionals to learn and adapt to the emerging technologies in the field of electric vehicles. The formal inaugural address was given by Dr. Ashok S, Dean Research and Consultancy, Dr. Kumaravel S, Branch Counsellor IEEE

PES NIT Calicut student branch and Dr. V Karthikeyan, Faculty Co-ordinator and Dr. Saly George, HOD EED. Then we proceeded to various keynote addresses by eminent personalities from Robert Bosch and MathWorks. For the workshop, stalls were set up by the companies Hykon, Fluke and OPAL-RT outside Chanakya hall. Posters were displayed for project work done by MTech and Phd students researching in electric vehicle technology.

Keynote Lecture 1

Expert : Mr Pradeep Kumar Keloth

Topic : System Engineering for Electrification

Venue : Chanakya Hall

The first keynote address was given by Mr. Pradeep Kumar Keloth, Head of Engineering for EV system, Robert Bosch Engineering and Business Solutions. India. He started the lecture by briefly explaining about the gradual development of Automobile technology from the traditional IC engines to pure Electric Vehicles. Also he explained about the practical challenges and constraints in the System Engineering for Electrification. He ended the talk by mentioning about the most recent developments in this field.

Keynote Lecture 2

Expert : Mr Vijayalayan R

Topic : Model based design for vehicle electrification

Mr Vijayalayan R, Manager Team of Control Design Application Engineers, MathWorks gave an overall idea regarding MATLAB applications in Model based design of Electric Vehicles. He later demonstrated the various Control System based MATLAB tools used in the design stage of Electric Vehicles.

Keynote Lecture 3

Expert : Mr Prasanna Deshpande

Topic : Designing efficient power electronic systems using Simulation

This Keynote address was delivered by Mr Prasanna Deshpande, Sr, Applications Engineer, MathWorks. He explained about the different strategies for the design of power electronic systems for electric vehicles. Later, he demonstrated MATLAB models of power electronic the simulation of some of the systems.

Day 2: 16th March 2019

Keynote Lecture 4

Expert : Dr. Nandakumar

Topic: Electric and hybrid electric systems.

Day 2 of the Workshop started with a keynote lecture on the topic "Electric and hybrid electric systems" was delivered by Dr.Nandakumar, Expert, "Electric and Hybrid vehicle systems, Robert Bosch. He gave a detailed explanation regarding the technical differences between electric and hybrid electric vehicles. He ended his lecture by pointing out the practical applications of these systems.



Keynote Lecture 5

Expert : Mr. Shashank H M

Topic :lithium-ion battery performance limits-modelling

Challenges behind it

This keynote lecture was given by Mr. Shashank H M, Robert Bosch. He explained about the constraints affecting the performance of Li-ion batteries. He also talked about the various methods for modelling battery systems and the challenges associated with it.

Keynote Lecture 6

Expert : Mr. Augustin G

Topic : Design challenges involved in BEV components

Development.

Mr Augustin G, Robert Bosch talked about the design challenges involved in BEV Components. This lecture gave the participants an idea about the various components associated with a BEV and how to identify them correctly in the design stage. He ended the talk by mentioning the difficulties one faces in selecting the components and the common failures one encounters in the design stage of a BEV.

A total of 112 participants including students, faculties and professionals from in and across the country attended

the 2 day workshop. Vote of thanks was delivered by Dr Kumaravel S. (Branch IEEE Power and Energy Society Student programme was coordinated by Chapter , NITC Dr . Counsellor .Karthikeyan Asst Pr EED NITC, Dr Kumaravel S. (Branch), ofessor (Counsellor), Sangeeth P G eneral Secretary) and Gokul G(Treasurer) , IEEE Power and Energ Society Student Chapter, NITC.

ARDUINO CHALLENGE COMPETITION

As part of ARDUINO day(March 16th),an 'ARDUINO CHALLENGE' competition was conducted at Viswajyothi College of Engineering and Technology. They had conducted this competition as 3 levels, from which they did a filtering after each levels by the participant team's performance.First level was a basic quiz level,second level consist of programming and the 3rd level was project making. Provided cash prize of 3k for the winner and 2k for the runnerup team.This was a two day competition where the 1st level was conducted on March 15th and the last 2 levels on march 18th.This event was successful because of the spectacular volunteering of our PES members.This inturn collects or made a network among the students who are passionate about Arduino.



It had been a great honour for the PES chapter of Viswajyothi student branch to associate with the KSEB ENGINEERS' ASSOCIATION (Engineers' house .TC26/1300, Panavila Jn .thiruvananthapuram) in coordinating the 10th seminar series state level competition held on 29th march 2019 at Viswajyothi college of engineering and technology,Vazhakulam, Muvattupuzha. The dedication and outstanding commitment of the volunteers were appreciated during the ceremony.

INTERNATIONAL WATER DAY



IEEE PES SBC MESCE conducted a session on the topic, 'Working of Hydroelectricity' on 22nd March as a part of International water day.

The session was conducted exclusively for the 1st year students by the senior student and the IEEE PES Chairman, Aadil Mohammed Mansoor. 35 students attended the session.

TEACHERS TRAINING PROGRAM



IEEE PES SBS MESCE in association with SEEM, Kerala Chapter conducted a Teachers training program on 23/03/19 at Dept. of EEE, MESCE.

The program started at 10 AM with the silent prayer. Mr. Hari Kumar K P, Assistant Executive Engineer welcomed the gathering. The program was Inaugurated by our Principal Dr. Varadarajan A S. Facilitations were given by Mr. C M Varghese, CEO Igatech and Maya G, Associated Professor and IEEE Counselor, MESCE.

The IoT session was handled by P K Sivanandan.

The program was concluded by the Advisor of IEEE PES SBC MESCE, Dr. Nafeesa K.

CREATE-IT WORKSHOP ON PHOTOSHOP



On 6th March 2019, IEEE Student Branch of NSS College of Engineering, Palakkad has conducted the Workshop Create-It Workshop on Photoshop. The session was conducted by Swathi Chandra R, IEEE SB NSSCE member. In the current scenario, Digital promotions plays a pivotal role in marketing, amongst the most creative and efficient are being raised by Cooperatives. Photoshop serves as a language in communicating a detailed description of the product/event in a pixelated sheet. The session spoke about creating a digital poster from a blank page using the basic tools and layer masks. The workshop was concluded by an interactive session followed by a competition in designing an ID Card.

IEEE PES HUMANITARIAN ACTIVITIES COMMITTEE PROJECT "RENEWABLE AND SUSTAINABLE EMPOWERMENT FOR THE NEEDY"

The IEEE SB NSSCE in association with Power and Energy Society (PES) was given the opportunity to do the IEEE PES Humanitarian Activities Committee Project (HAC project) "Renewable and sustainable empowerment for the needy". this was proposed by a team of five student members- Ms Sreelakshmi S Aji, Ms Thanusha J, Ms Annmary Joseph and the Current Vice-Chairman of our IEEE SB Chapter, Mr. Abhiraj V S. The team won the IEEE PES HAC competition on 10th October 2018 and was one among the three internationally selected project. The project was successfully commenced on the 30th of March 2019. With the full support from the Chapter Advisor, Assistant Professor Mrs.

Nimitha Muraleedharan and from our mentor, the current Chairman of our IEEE SB Chapter, Mr. Abhinav R, the project was successful.

PROJECT MOTIVE

Due to flood effects in Kerala, most of the tribal villages nearby had lost their homes and access to the daily utilities. In light of this prevailing situation, we had planned to provide lantern kits (8-10) to the needy students. We had decided to make the kit by ourselves, by which we can get ourselves more exposed to the technology works. Also, giving more preference to women empowerment, our women members were engaged in the manufacturing of the lanterns. In addition, we have thought of providing half day awareness classes to the youth of the tribal community.

PROJECT IMPLEMENTATION:

1. FINALISING PERIPHERALS AND PLACE

We had started with finalising the circuit and then searching for the components and were able to find some of the best materials possible. Here by we set our work to full motion from 15th November 2018. Next, we started searching for an appropriate nearby tribal society affected by flood. The place surveyed and finally selected was "AYYAPANPOTTA". On interacting with the residents, we came to find out that they were all interested for it. We approached the ward member, Mrs. Sali Varghese and was fully supported by her.

2. HANDS ON CUM ASSEMBLING WORKSHOP

We wanted to give all the volunteers and members of our IEEE SB the basic idea of the project so with regard to that we organized 2-day hands-on cum assembling workshop of solar lamp and led kit assembling on 21st and 22nd of March. About 15-20 members attended the workshop and were actively involved. Firstly, we briefed the aim and the reason for doing this project. Ms. Thanusha explained the concept behind the solar panel, the way to choose the appropriate solar panel with the rated values and the disadvantages of the panel with practical demonstrations. Ms. Sreelakshmi S Aji handled the session on battery charging circuit designing of the led lamps. She organized the session very well, explaining the volunteers about the way to choose the appropriate components to get the required output. With all this the volunteers were made to assemble the circuit and solder it on the board. The bulb assembling session where the volunteers were shown the

various components of a bulb along with the explanation of their functions was taken by Ms Anmary Joseph. With this the workshop was concluded and was a success where we got our circuits ready and lamp assembled by our fellow volunteers.

3. PROJECT INAUGURATION

On 30th march 2018 we all reached the village by 9:00 am and started setting the hall which we were allocated for conducting our project. The inauguration was done by Mr. Abu john, Assistant Engineer of KSEB Malampuzha, Mr. Sunil Kumar, Sub-Engineer on KSEB Malampuzha and ward member, Ms Sali Varghese

4. FORENOON SESSION Soon after the inauguration Mr. Abu john and Mr. Sunil Kumar took a session where they had covered topics that would help the residents understand the basics of power and energy and also gave them the general overview of generation, transmission and distribution of electric power supply by making use of diagrams, presentation and charts.

Through this session they discussed the various hazards caused by electricity and corresponding methods of safety and precautions. This knowledge enabled the tribals to handle electricity with caution and care. This also equipped them with the basic precautions that have to be taken under such condition

We then provided a demonstration & hands-on session on basic electric fittings like bulb fitting, fuse wiring, grounding etc. This helped them attain basic practical experience in dealing with electrical fittings.

5. AFTERNOON SESSION Then there was a presentation on renewable energy resources and its advantages over conventional energy resources. This helped them understand the importance of having a sustainable approach towards project undertaken. We then gave a solar emergency lamp kit to them with an appropriate demonstration on its use and maintenance. This served as a small practical example of a sustainable device working on renewable energy i.e., solar energy, in this case, this helped them relate to the topic of sustainability

6 Report- IEEE PES HAC Project

Finally, the residents were made to assemble the LED kit under the guidance and training of our volunteers. This gave them an exposure to

some elementary processes like assembling and soldering etc. This session involved their active participation and boost their self-esteem. We had completed our session on 2.00 pm and distributed ten solar emergency lamps manufactured by IEEE volunteers, fifty 9 W lamp kit assembled and distributed to the families in Kava.

The session was officially ended at 3.00 pm, the event was made grant success by the coordination of the residents in Kava, along with the dedication of our members. The success of the IEEE PES Humanitarian Activities Committee Project (HAC project) was possible with the good will and dedication of all the crew members and the guidance of our mentors. This project will always be an achievement for the IEEE SB of our college, this is just a beginning of a new revolution and more stories about our success are yet to be carved.

WATCH, LISTEN AND ANSWER COMPETITION



IEEE PES SBC MESCE conducted a “Watch , Listen and Answer competition on 1st April 2019. The programme was an interactive Q&A competition where an informative video of ten minutes duration was played for the contestants which they had to watch and listen carefully and questions based on the video were asked in a live Quiz styled session. A total of 27 students from our college , of which 11 were IEEE members took part in the event . The event went on for one hour as scheduled . The programme was conducted by the IEEE . 5 members of IEEE PES SBC volunteered for the programme. The informative video was on Artificial Intelligence (AI) and the contestants voiced the video to be informative and interesting. Students from different departments and batches took part in the programme. The contestants were very active and cooperative throughout the programme which made the job of the volunteers easy. The first three place holders were awarded with

certificates and cash prizes. The programme was concluded by the advisor of IEEE PES SBC MESCE , Dr.Nafeesa K concluded the programme.

PES DAY CELEBRATION IEEE SB NSSCE



The quiz was conducted on behalf of the PES chapter, Kerala section. The quiz comprised of 15 teams each with 2 enthusiastic participants. The venue of the program was the DLH room of NSS College of engineering. The information regarding the competition was made to reach the students of every branch, with the help of our publicity team, who did a splendid job in that. The quiz provided the students an opportunity to make use of their up to date knowledge on science and technology. The quiz was led by quiz master Mr Ajay. The time duration was fixed to 1-hour. Winners of PES day quiz competition are Bhadra and Adharsh. Second prize bagged by Ajith and Anirudhan and the third prize bagged by Manju and Rakhi.

SUSTAINABLE ENERGY WORKSHOP

IEEE PES SBC MESCE conducted a “Watch , Listen and Answer competition on 1st April 2019. IEEE PES SBC MESCE In collaboration with SEEM Kerala chapter organised a one day ‘Sustainable Energy Workshop’ for students on 5th April 2019 at EEE seminar hall. About 30 students attended the workshop. The workshop started with a silent prayer and the gathering was welcomed by Mr.Aadil Mohammed Mansoor, Chairman IEEE PES SBC MESCE . The program was presided by Dr.Nafeesa, Advisor IEEE PES SBC MESCE and was inaugurated by Dr.Rajan Babu , HOD of EEE Department MESCE. The session was handled by Mr Thanweer Gafoor and Ms. Sajna.

During this workshop, the students learnt the concept and procedure of energy auditing opportunities of energy saving in motor, AC,

Lights. Exact energy consuming calculation and analysis of electric bills was demonstrated. Survey forms were distributed among the attendees. The program was concluded by Dr.Maya G, IEEE counsellor MESCE.

PAPER PRESENTATION CEA



IEEE SB College of Engineering Adoor conducted a Paper Presentation on the topic 'Hybrid Vehicle' as a part of college techno cultural fest AAROH 2K19. Presentation was conducted on 6th April 2019. There were 12 teams as participants.

The judges were Sreeja P (Assistant professor, EEE dept. CEA) Prashob P (Assistant professor, EEE department, CEC), Praveen P (Assistant professor, Mechanical department, CEA).

The first prize Rs 5000 was awarded to Saint Gits College, Pathamuttam. The second prize Rs 3000 was awarded to RIT engineering College. The third prize was awarded Rs 1000 to College of Engineering, Adoor.

HOW TO MAKE A SUCCESSFUL PAPER PRESENTATION



PES conducted a workshop on the topic "How to make a successful presentation". The

workshop was handled by Dr: John George, student branch councillor, IEEE SB CEA.

The workshop was followed by the informative session for writing and presenting general and technical papers. It was an interactive session and the students were able to clear their doubts and have a better idea of the top.

INVITED LECTURE ON SMALL SIGNAL STABILITY



An invited lecture programme was conducted on the topic "SMALL SIGNAL STABILITY" by Asst.Prof T K Renuka in association with the PES day (20/04/2019 , 1:00 pm) at Research Lab, EEE Department. It was held under the banner of IEEE Power and Energy Society , GEC Chapter. The program was attended by almost 45 Mtech Students and 2 Faculties. The Program kickstarted with a Welcome address by Prof Mini.V, followed by Arun P B (S4,Mtech Power Student) who gave a brief introduction about the speaker

Prof. Renuka T. K. started her career as a Production Executive at Cedicom Electronics Shornur. Later in 1996 she was elevated to the post of Technical Consultant of the same company. During her career at Cedicom, she developed a strong passion towards teaching and hence acquired the M. Tech degree from her Alma Mater to join teaching profession, first at Calicut University Institute of Engineering and Technology, University Campus and later at MES College of Engineering Kuttippuram.

The session moved forward with an introduction to Stability in power system and also its classification. Ms. Renuka then moved on to breach topics like small signal stability and the causes of small signal instability, how it could be cleared by introducing Automatic Voltage Regulator. She mentioned her research work related to introduction of Renewable energy Resources in to the IEEE 14 bus system and how the stability is affected by this. She also motivated and advised the

students to take up research work related to small signal Stability. The session ended with Shafla Jasmine (S2, Mtech Power Systems) giving the vote of thanks.

MALAKKAPPARA SOLAR PROJECT



It hasn't been many years since the rural nooks of our country started enjoying the luxury of having electricity at the snap of their fingers. Little is known to the outside world that there are a lot of places unknown even to the executives of the state or are often ignored. Malakkapara, of the southern state of Tamil Nadu of India is such a locality. Located on the border region between the states of Tamil Nadu and Kerala, Vettivitta Kaadu is a remote village inside the jungle with very little facilities and electricity is not one of the perks they enjoy. The only way to reach the village situated in the Tamil Nadu state is by entering the forest and going on a 5 km hike. The transmission of electricity to the village is not viable as pulling electric transmission lines and installation of electric posts throughout the jungle is not economically and logically possible. IEEE PES SBC MES College of Engineering, Kuttipuram took up the task to bring



electricity to the villagers. As part of the project, PES execom members led by IEEE PES SBC Chairman Aadil Muhammed

Mansoor, Nadheer PP, Chairman IEEE SB MESCE and Muhammed Muneer, PES volunteer under the assistance of IIT Researcher Dr Dileep G visited the village and checked the possibilities of installing an extensive solar stand alone system to power up the village with electricity. For a start, the students installed a basic solar power system providing enough current to power up two LED bulbs. The villagers who used to spend their nights in the darkness of the jungle or under the mere light of kerosene lamps were thrilled on having the first electrical system in their nativity. The volunteers took data on the number of houses in the locality and plans on installing the system over the whole area is the plan of the phase 2 of the Malakkapara solar project. The volunteers supplied the children of the village with chocolates and biscuits as a gesture of goodwill. The project is an ongoing one. Phase two of the project is in the beginning stage.

PES QUIZ COMPETITION 2K19

The Power and Energy Society Quiz competition of the year 2019 was held on College Of Engineering Munnar at 22nd April 2019 Monday at 8 pm. The programme was coordinated by the Power and Energy Society student chapter of IEEE SB College of Engineering Munnar. There were 30 participants who registered by online and offline facilities. The number of questions was 20 including questions about general knowledge, different aspects of engineering, etc. The quiz competition was really good enough to satisfy the participants. Melbin Simon of 3rd year CSE dept. had won first place and Sourav KJ of 3rd year CSE dept and Lakshmi K first year ME dept. had won the second and third places respectively.

PES O QUIZ

PES O' QUIZ is an online quiz event conducted by the Power and Energy Society of IEEE SCT SB as a part of its PES DAY celebrations.

The quiz was conducted on 'myquiz' quizmaker platform on the topic "Electric Cars". Total duration of the quiz was 7 minutes. There were 26 Participants. Participants were added to a Whatsapp group for providing instructions conveniently. There were 20 questions. Nine

questions were based on the brand Tesla. Four questions were based on engineering of electric cars. The rest of the questions were general contemporary questions. Winners were decided based on maximum number of correct answers in the quickest time. Three Winners were declared. Winners were presented certificates.

PES DAY QUIZ SJ CET

22nd April 2019 is celebrated as the PES DAY all around the globe. As a part of PES day celebrations, IEEE PES SB SJ CET has conducted an online quiz competition on the topic Power transmission, Distribution and Protection. The quiz was conducted on 22nd April 2019 for all semester B.tech students across the world. . Out of which 42 students attended the quiz. The Sanjo Siby Moolamkunnam of St.Joseph's College of engineering and Technology, Palai and Aswathy Gopalakrishnan from SCMS School of Engineering and Technology, Ernakulam has secured the first and second positions respectively.

The quiz was setup their official IEEE website. And it was done by Mihil Jose of S4 CSE, SJ CET Palai. The link of the portal was shared to the participants through mail prior to the competition. There were 30 questions in total and they were arranged into three sections like simple, medium and high levels. Questions from three sections were shuffled and given. It was a MCQ type quizing. Each participant should complete answering 30 questions within a duration of 50 min from the moment of starting. 50 minutes was calculated by giving 1 min for each simple question and 2 min for each problematic question. The questions were selected from previous gate questions and referred the textbooks of power generation, transmission and protection. The portal link was closed after 12.30 pm. The evaluation of responses was done in two tyres. The first level of evaluation was done by the execom members itself and then it was crosschecked by our faculty advisor Asst. Prof. Jojin Thomas (EEE Dept.). The participant holding the first position will be rewarded an amount of Rs.1250 with the participation certificate and the participant holding the second position will be rewarded with Rs.750 and a participation certificate. Participation certificates of all participants has been sent to the corresponding email id provided by

them at the time of registration.
PES DAY QUIZ - CEK



IEEE SB CEK organized a quiz contest for all first year students as a part of IEEE Day celebration 2019 under IEEE PES Kerala Chapter on October 1st 2019. It was held at ECE (dept.) seminar hall from 1:00pm to 1:40pm in presence of the SB advisor, Er. Haseena P Y . The quiz started with an introductory session by the SB Jt. Secretary, Rafiya Al Ebrahim on IEEE Day celebration. The PES chair, Hari Prasad, then summarized the activities of PES and gave a general description on the quiz.

The quiz began at 1:20pm. It carried a total of 40 questions, (20 on general knowledge, 10 on current affairs and 10 on science and engineering). More than 35 students participated in the competition. 20 minutes was given to write the answers.

The winners will be qualified for the finals at hub and session levels to be held at Rajiv Gandhi Institute of Technology, Kottayam.

LECTIO DISPUTATIO



PES conducted an interactive session with the students. They had provision to select any topic which included technology for future and power conservation and have to talk about the topic for two minutes. Those students who continue for 5 minutes in the talk show were awarded.

PES DAY QUIZ - CET



A quiz program for the science enthusiasts of our college was conducted on April 26. The event was conducted from 12pm - 1pm. 20 questions from various domains of science, reasoning and general knowledge were selected. The event witnessed heavy participation. The top ten students were offered free industrial visit to Koodankulam power plant.

PES DAY CELEBRATION



An IEEE PES DAY was celebrated in Vimal Jyothi Engineering College on 29th APRIL 2019 in association with IEEE PES SBC VJEC.

As a part of PES DAY CELEBRATION, a cake cutting was organised in association with IEEE PES SBC VJEC. The cake was cut by Prof. Laly James, Branch Counselor, IEEE SB VJEC, along with the students of IEEE SB VJEC.

PES DAY CELEBRATION - TKMC



In April 22, 2008, the Power Engineering Society changed its name to the Power & Energy

Society after a final vote from the PES membership. The past 2018 IEEE PES President Wanda

Reder made the announcement at the 2008 IEEE PES Transmission and Distribution Conference

in Chicago, Illinois. This name change was motivated by the notion that the Power Engineering

Society name did not properly describe the scope of interest in which the PES was involved.

Further, it was determined that a new name would more precisely designate the areas of PES

involvement. Therefore, the Power & Energy Society name would be more appropriate and

attractive to all participants in the industry involved in the electric energy field.

PENCIL DRAWING AND SENTENCE WRITING COMPETITION



IEEE SB NSS College of engineering, Palakkad has conducted pencil drawing and sentence writing competition from 30th April 2019 to 4th May 2019.

Lakshvin VM was awarded first prize. What he penned is quoted below

“Through her expressions and excitement about climbing the mountains and touching the clouds, I vicariously felt everything As I smiled nodding on my wheelchair.”

The second was awarded to Lavanya CS, who beautifully portrayed the present “social-media generation”.

“Posts, updates and uploads, life ain’t so vicarious anymore, or is it?”

And the third prize was for Rekha SS for her

empathy towards the heroine of a movie she recently watched.

“After watching the movie, I vicariously travelled through the life of heroine.”

The competition was a big success. Apart from the usual technical events, participants were surprised to see the non-technical event, which also helped us to find budding writers among the youth

In addition to it , a pencil drawing competition was conducted in the theme “Role model potrait”. Various entries across the globe participated in the competition and each entries were made in such a way that keen observation in done for the potrayal of heros/ heroines. The competition was world wide and all received nominations were posted on the official Instagram page of SB for knowing public response.Mr. Siva Prasad won the first prize for the potrayal of the hero Amarendra Bahubali, the hero of the film series Bahubali, which won not only in the big screen but was able to make waves of change in the common man. As we can see, the artist had take keen interest for making the facial expression powerful. Same can be observed in the detailing of the background, the forts

ISQIP 2019

A four-day long training programme to all Electrical & Electronics Engineering students and fellow enthusiasts was organised from July 6th to July 9th 2019, under the banner of IEEE Power & Energy Society Student Branch Chapter College of Engineering Chengannur, offering both technical and managerial sessions for the overall development of the participants. The main objective of the ISQIP is to motivate the students in exploring the practical side of the knowledge acquired from the syllabus, as well as serving as a platform for exposing topics that appear in greater depth in later courses.

The proposed EE ISQIP has been designed and targeted to mark the following impacts on the society and student community:

- To improve the technical knowledge of the attendees and open them up to further learning in the Electrical Engineering field.
- To increase the membership retention and partaking of active PES volunteers in every activity and event organised afterwards.
- To successfully instruct and train young

professional students in various aspects of Electrical Engineering.

- To provide a solid platform for students to enhance their skills and to showcase their abilities.

1. Embedded Platforms and IoT

Experimental knowledge in hardware and software combinations and establishment of productive communication among multiple devices or networks are crucial for acquiring a prosperous career in Electrical Engineering. The EE ISQIP'19 delegates took their first step into industrial experience to aid their ambition through a two day session on Embedded Platforms and IoT. It was handled by Mr. Nebu Pulickal and Mr. Sayooj K K, Research & Development Engineers at Optez Solutions Private Limited assisted by Embedded Application Engineer Mr. Anandhu K S. The first session was kick started with an introduction to Embedded Platforms wherein the attendees worked with concepts on NodeMCU and its related operations. It was applied in developing a program to operate an LED bulb. Further, the session went on with basic programming, IoT concepts and its interference with embedded systems. The second day session concentrated on applications of IoT and the delegates came across more advanced programs that were meant to perform specialized tasks. They were able to establish a connection between the previously created LED setup and Google Assistant, wherein the Google Assistant received commands from the user and controlled the LED bulb as and when required. The session was hence concluded with a discussion on the advancements and emerging trends in IoT and its importance in controlling operations. Ms. Mahima Susan Bejoy, Chairperson, IEEE Power & Energy Society Student Branch Chapter College of Engineering Chengannur, honoured the mentors with a memento of appreciation.

2. Renewable and Conventional Energy

The third and fourth day of EE ISQIP was made remarkable by the elaborate sessions taken by two experts Mr. Muhamed Rabeeh N and Mr. Antony Varghese on the topic ‘Renewable and Conventional Energy’. The talk showcased the basic idea that renewable energy is indeed the future and will play a major role in providing a clean, secure, and sustainable energy economy. Mr. Rabeeh started off the session with an introduction about renewable

energy sources and ways to harness them. In this connection, he mentioned that the use of renewables will not only reduce risk to the climate and environment, but also reduce the dependency on fossil fuels, which in turn will lead to a fall in oil prices owing to reduced demand. In the afternoon session, he drew the attention of the delegates towards solar energy, its applications, way to harness them, designing, and also about the construction of solar panels for various projects. The talk was divided into different sections ranging from introduction to design and implementation for optimum yield and minimum cost and also about ways to make revenue by connecting it to the 'GRID'. On the fourth day, Mr. Antony briefed the students about electric vehicles and their importance. Taking the discussion forward, he demonstrated how to make a solar charger as a first step towards making renewable energy as the ultimate source of energy in the future. The attendees found themselves successful in this attempt. The workshop covered both theoretical and practical aspects as well. The huge number of questions and queries from the delegates showed their keen interest. Altogether, the session provided an apt platform for the participants to recognize the need to promote the widespread adoption of renewable energy. EI ISQIP marked its conclusion with a valedictory function, and photo session at 4 pm. The guest speakers were thanked and presented with a memento of CEC ISQIP by the Chairperson of IEEE PES Student Branch Chapter CEC, Ms. Mahima Susan Bejoy.

SUBSTATION AND SOLAR PANEL VISIT

IEEE PES SB SJ CET conducted an event, "A Journey to Solar-the hope to future", a visit to the substation and solar panel system of our college. The event was conducted on 19th September 2019 from 3.30 p.m to 5.30 pm for all semester B.tech students in SJ CET. The call for registration was out on 15th September 2019. And we got 55 responses by the end of 17th September 2019. Out of which 49 students attended the event. The visit was guided by Prof. P.V.Varkey, HoD of Electrical and Electrical Engineering Dept. and former Chief Electrical Inspector to the Govt. Of Kerala and by Assistant Prof. Liju Mathew R, EEE Dept.

The event started at 3.30 pm with an

Introduction talk by Prof. P.V.Varkey, on the present scenario of renewable energy. The talk concluded at 4.30 pm. The students were then divided into two groups.



One group was guided by Prof. P.V.Varkey to the 11kV substation where the students were described about the different switching systems and protections. And also about the specification of the transformer and the earthing systems provided. The other group of students were guided by Asst. Prof. Liju Mathew R to the solar panel setup of 100 MW power generation. The students were described about different solar panel systems, solar cells and how power is generated using solar cells. The importance of renewable energy and its emerging trend is described through the process. The students from both the groups got to visit both the systems. The event ended up at 5.30 pm.

The certificates for the participants were distributed.

FUTURA 2.0

IEEE WIE SB CEA conducted the second edition of the star event named FUTURA in association with PES and RAS. The workshop was aimed to nurture the interest in science in the budding minds of students and to shape on making the students familiarize the basics of ROBOTICS. The student were also given hands on session on a simple circuit with the basic electronic component. The classes were made more interesting by including interactive session with the students and they were encouraged with the prizes as a token appreciation.

Received very good feedbacks from both the students and officials of various institutions regarding the workshop conducted and we were successful in achieving our aim of introducing curiosity of science in the young minds.

The program was conducted for three days on

three different institutions.



DAY 1

Date: 26th July 2019

Venue: Tapovan public school, Adoor

No of students: 80



DAY 2

Date: 29th July 2019

Venue: Mannathu Parvathy Amma Memorial NSS School for Girls

No of students: 110



DAY 3

Date: 30th July 2019

Venue: Kendra Vidyalaya Adoor Shift

No of students: 70

IMAGE PROCESSING WORKSHOP



IEEE PES SCT SB in association with Acumen Global Pvt Ltd. hosted a two day workshop on Image Processing using MATLAB on 24th and 25th August, 2019. The Session was handled by three faculties from Acumen Global Pvt. Ltd. Acumen Global Pvt. Ltd. Is a Software Development and Training company. The workshop began exactly at 10:00 a.m. Participants were provisioned to attend the workshop as a team of two as well as individually. The workshop mainly focused on introducing MATLAB's comprehensive set of reference-standard algorithms and workflow applications for image processing, analysis, visualisation and algorithm development. We had 8 volunteers who were very dedicated in helping the participants at every point of time. They were made well aware of the MATLAB interface and how to process an image using that. They were made thorough about the basics and empowered to explore more ways of image processing and its wide applications in the fields of medicine, industry, military, consumer electronics etc. Participants were given a brief introduction into other areas such as machine learning and artificial intelligence. Food and refreshments were provided to all the participants. The lecturers were given a tokens of appreciation to express the gratitude of SB. The workshop spanned two days covered all basics to set a platform for the participants to improve on their own. The feedbacks were extremely positive, the participants were all enthusiastic.

LECTURETTE



On 19th September 2019,PES conducted a

talk named “LECTURETTE” a topic on power field from IEEE spectrum magazine for IEEE members. The talk started by an interactive session by Novin Francis, chairperson of PES society, about “Magnetic Heart” it is an artificial human heart, it beats 42 million times a year. Making a machine that can pump so reliably has been a challenge.

It was one of the beneficial session for the students as they can get a new information about technology and their contribution towards the world. There were 25 participants. All the informative ideas from the spectrum magazine of the IEEE. SB has decided to continue this talk twice in a month by the IEEE members and it is a best platform for the students to improve their standards.

WORKSHOP ON SOLAR AND SMART CITY

IEEE PES SBC MESCE conducted a full day workshop on Solar and Smartcity as a part of FrizBee’19(Annual flagship event of IEEE SB MESCE) on 21st of September 2019.

The workshop on Solar and Smart city was handled by 2 personalities, Mr. Nikhil Sasidharan and Mr. Ahammed Kabeer T A. 41 Students from different colleges attended the workshop.



The forenoon session on Solar was handled by Mr. Nikhil Sasidharan and the afternoon session on Smart city by Mr. Ahammed Kabeer T A.

The session started at 9:30 AM with a total of 41 delegates. Mr. Nikhil Sasidharan lead an interactive session on Solar. He discussed about the Solar energy, Solar electricity, Solar thermal and their applications. And also about other renewable energy technologies. Later the working of photovoltaic cells were also discussed. The students were given the problems to solve and the best students were given the rewards. After that the solar panel

in the college were shown and the students were given enough time to clear their doubts. The session was concluded at 1 PM with the feedback session and the photo session. Mr. Nikhil Sasidharan was presented with a token of appreciation.



The afternoon session began at 2 PM. Mr. Ahammed Kabeer T A handled the session on Smart city. He discussed about his big projects and ideas on Smart cities. The students were given a perfect idea on the architecture of Smart cities. Future challenges and solutions were also discussed. In the end, a quiz on the session was conducted and the winners were awarded. The session wound up at 5 PM with the feedback and photo session. Mr. Ahammed Kabeer T A was presented with a token of appreciation.

WORKSHOP ON FRONT END DEVELOPMENT



A two day intracollegiate workshop on ‘Front-end Development using Angular’ was conducted on October 10th and 11th , 2019 by IEEE Student Branch College of Engineering Krarunagapally in association with IEEE PES SBC CEK and IEEE CS College of Engineering Karunagappally .The workshop was mainly taken over by Mr.Rejin, faculty from ICT Academy, who had taken , such a informative technical Workshop on Angular 7. The first day of the workshop mainly focused on the basics of HTML, CSS and JavaScript. He had also introduced on UI/UX Development along with basics of angular and Visual Studio Code. The

second day mainly focused on Node Js and more detailed coding with angular to build a Front-end platform. The workshop was very much appreciated by the students as the faculty made the workshop very much interactive. Around 40 students from various branches in the College had participated in the

event. Everyone had coded just a basic framework for their website and single page app development.

PRODUCT DESIGN WORKSHOP



IEEE Student Branch College Of Engineering Karunagappally in association with the IEEE PES SBC CEK conducted a Product Design Workshop on 27th September 2019 from morning 9 to evening 4. Our PES chairman Mr.Hari Prasad took the session. 65 students attended the workshop. The session focused on rules and strategies to be followed in designing a project and factors to improve the product sale in the market. He gave an insight on how detailing like brand, efficiency etc. can affect the market value and how advertising of similar projects was provided. At the end of the session, the participants were given a task to come up with innovative products from a list of day-to-day tools, on the topic 'Inhabitation in Moon' and design them considering these priorities. The participants came up with very creative products like current detectors, shades, propellers etc.

LIGHTING FOR HUMANITY



The backbone of IEEE lies in it's firm fervour to furnish the torn edges of a society and uplift it on a whole. Each every block of society upholds a major importance and therefore as part of the IEEE day celebration, the team of

College of Engineering Karunagappally took upon their shoulders a responsibility to cast a spell of development. The team arranged set of basic electrical equipments such as bulb etc, organised them and exposed the concept of efficiency and power saving to the poor families, visiting their respective residences. The flame of determination that the team radiated and the sense of gratitude they received from the families is evident enough to infuse a breeze of pride, aspiring every student to inspire and be inspired!

ONLINE POSTER DESIGNING COMPETITION



IEEE PES SBC RIT conducted an Online Poster Designing Competition on the theme "PES Zero Hunger Day", which spanned from 2nd October 2019 to 6th October 2019. The competition was conducted in accordance to Zero Hunger Day which was observed on 25th September 2019. The main objective of the competition was to spread awareness among the students about the obstacles faced by people due to scarcity and wastage of food. 15 participants from different departments competed in the competition and the winner, Samnoon Muad T K, received a cash prize of Rs 500 from the Branch Counsellor of IEEE SB RIT, Mrs.Anu George during the result declaration on 10th October 2019. The prize winning poster was pasted near the waste disposal areas all throughout the college campus. Many of the students who participated agreed that the competition was truly an inspiration for the budding designers. We hope the competition helped the students in recognizing the hardships faced by millions of people all around the world.

CLEANING CAMPAIGN



On 2nd October 2019, as a part of Gandhi Jayanti and PES day celebration, IEEE Volunteers of MBCET cleaned the college and its premises as part of IEEE Day celebration, under supervision of Abin Geevarghese and Eldhose Mathew. Volunteers were there from all years and they actively took part the campaign. Refreshments were provided to all the volunteers after the event. Prof. Robins Anto addressed the student's and conveyed sincere thanks to all the students who participated & SB of PES.

FOOD COLLECTION CAMPAIGN



As a part of the global PES ZERO HUNGER DAY celebrations, a food collection drive was organized at Rajiv Gandhi Institute of Technology Kottayam by the PES Chapter IEEE SB RIT on 11th and 12th October 2019. Food Donation program was carried out in association with Abhayam Charitable Trust, a local NGO. PES ZERO HUNGER DAY was celebrated on 25th September commemorating the history of 17 UN Sustainable Development Goals in order to bring More Power to the Future. Food collection and donation drive was planned to help in eradicating local hunger. IEEE and non IEEE students, teachers and staff of the institute involved with great interest in contributing and participating for the cause. 60 volunteers took part in the drive. Food collection drive was a grand success with 376 kilograms of non-perishable food items were collected over the days of 11th and 12th of

October. On 12th of October the food items collected at the college was handed over to the NGO. Abhayam charitable trust is an NGO which works to provide food and shelter for the destitute patients of Medical College Hospital Kottayam.

APPLICATIONS OF LabVIEW IN ELECTRICAL ENGINEERING



On 11th and 12th October 2019, IEEE Power & Energy Society student Branch NIT Calicut in association with Industrial Power Group, Department of Electrical Engineering and National Instruments has organized a National Workshop on 'Applications of LabVIEW in Electrical Engineering and Hands-on training on LabVIEW based hardware modules'. The goal of the workshop was to provide a comprehensive understanding of the LabVIEW platform and to enable system design approach using LabVIEW. During these two days of workshop, the participants were given exposure on different possibilities of using National Instruments LabVIEW in Electrical Engineering applications and the different hardware modules like NI myRIO, NI myDAQ, NI ELVIS, NI cRIO etc.

On Day 1 an introduction to NIT graphical design system platform was given along with Navigating LabVIEW environment and the concept of data flow, creating your first application, using different programming structures and data structures and debugging and troubleshooting techniques. After Lunch He explained about Modularity: Creating subroutines, accessing files in LabVIEW, using sequential and Statebased design and Software Architectures in LabVIEW. Day 2 started with the interfacing of NI demonstration and discussion of NI ELVIS 2 myRIO, se and myDAQ, nsor interface with NI devices and later moved onto the introduction to NI RIO architecture and setup of NI cRIO Post Lunch the session included the measurement of Voltage, current and

Power using NI cRIO. Later the workshop discussed about electrical power toolkit, PCI 6602 counter / timer. The workshop came to a conclusion with a demonstration of NI ELVIS 3 and a Q & A session for the participants. A vote of thanks was delivered by Dr. Kumaravel S ,Branch Counsellor IEEE PES Student Chapter, NITC and a Momento was presented to the speaker Mr. Amal K Sebas developer. tian, certified LabVIEW.

QUADCOPTER WORKSHOP



IEEE Student Branch College Of Engineering Karunagappally in association with the IEEE PES SBC CEK conducted a Product Design Workshop on 17th October 2019. The event start with a prayer song followed by the IEEE code of ethics. The main of organizing this event was to encourage the leadership of junior IEEE members, the session was coordinated by the second year IEEE members and the session was taken to the 1st year students of our institution. Mostly all the IEEE embers of 1st first participated the event with a count of 50. The workshop was conducted with the intention of imparting the participants with the technical knowledge required to build a quad-copter and get it in a stable flight condition on their own. The duration of the workshop was two days and covered the theory of flight of quad-copters, practical tips in making a quad- copter, the flight control software and algorithms of quad-copter stabilization and also hands-on sessions on Arduino and MPU6050 accelerometer.

SAURORJYA



IEEE Student Branch of NSS College of Engineering, Palakkad has conducted the Workshop Saurorjya workshop on solar electrical system. The session was taken by Abhinav R. The Workshop was scheduled for a day on 21st October 2019 as part of ENCRYPTA 2.0.

The session started with an introduction to basic electrical wiring system in our home and about the very basics of solar electrical system. Practical testing of a basic unit solar panel made the session more interesting and understanding The session spoke about solar facts, components of solar off grid system and types of solar installation. The detailed explanation of the Design of Off Grid Solar System improved the knowledge about the current system in relevance. The session concluded by giving a brief introduction to Solar Design Software.

LED MANUFACTURING WORKSHOP



IEEE PES SBC MESCE conducted a full day LED bulb manufacturing workshop as a part of Urjotsav in IUHSS, Parappur on 21st October 2019.

The purpose was to give the students an awareness and a hands on training.

A class on energy wastage and about the manufacturing steps were given by 2 staffs from our college. The students were given the LED kit. The PES volunteers and the staffs together trained the students in manufacturing the LED bulb. The high school and higher secondary students participated in the event. It was a great experience for the students as well as the PES volunteers.

VERSION CONTROL WORKSHOP



A Version Control workshop was conducted for IEEE members of CEK in association with IEEE PES SBC CEK and IEEE CS CEK on 2nd November 2019. A total of 20 members participated the program. The session was taken by our SB chairman Mr. Akshay Krishnan. The participants were familiarized with version control system and GIT. Github was used for this purpose. All participants were made account on github.com and made a central repository for all. Git was installed locally on every participant's machine and basic commands like add, commit etc. were practiced locally. After the remote git is set up, all the participants collaborated on the central repository to learn how git actually works. During the session, we also discussed how open source projects works using git and how we can contribute to them.

