



CHAIRMAN SPEAKS

Er. Asok Kumar K FIE



Dear Members,

You have elected new office bearers to represent divisions in the committees of Kerala State Centre and all five Local Centres. These committees have taken charge with effect from the end of last month in respective AGMs and are slowly shifting gears. With your wholehearted support and guidance, I am sure that these new teams will be able to deliver their best and take activities in the Centres to new heights.

All of us are proud to be part of this organisation of great legacy. However, some members are seen to be reluctant to take up more responsibilities due to various reasons. This time, Chairman of the State Centre had to invoke relevant clause in the Bye Laws and appoint Honorary Secretary to three Local Centres in the State. I wish that members will contribute more to the cause of IEI and see it as a service to the engineering fraternity.

The overall performance of the Institution has been seriously hampered by the continued lockdown due to COVID19 pandemic and has severely reduced the revenue. It is the duty of all corporate members to mitigate this situation by organising more technical events with net surplus. Also, we have to bring more members to the roll of IEI. Higher level of interaction with academia, industry and the local bodies in the respective jurisdiction are essential to achieve this.

IEI is aligning its systems to suit the knowledge driven digital era and resort to electronic mode of communication. All of us have to be more responsive and put in extra efforts to make this happen. It is very important to keep the contact details of all members up to date in the membership database so as to be well informed about the activities.

I once again request your continued support and guidance so that the Institution remain in the forefront of engineering activities in our country.

HONORARY SECRETARY'S DESK

Er.Roy Mathew, MIE

Upcoming Events

03-11-2021 Wednesday Webinar on 'Engineering Strategic Systems for Atmanirbharata' by Mr. R. Muralidharan, Life Senior Member IEEE, CTO - Tata Advanced Systems Ltd., Mumbai, Member, Board of Directors, Wireless innovation Forum.

10-11-2021 Wednesday Webinar "My Experience with Heavy Haul Propulsion" by Mr.Ajith K Kumar, Vice President, Technology - Innovation in Wabtec, US

17-11-2021 Wednesday Webinar

24-11-2021 Wednesday Webinar



74TH ANNUAL GENERAL MEETING.

74th Annual General Meeting of IEI Kerala State Centre held was on 31-10-2021 at Visvesvaraya Bhavan, Thiruvananthapuram and was chaired by Er.N.Rajkumar, Immediate Past Chairman. Er.Asok Kumar K, Honorary Secretary presented the Annual Report for the period 2020-21 and the Audit Report for the FY 2020-21. Er.N.Rajkumar, Convenor, BoS announced the result of the Election. Er.Asok Kumar K, FIE and Er.Roy Mathew, MIE took charge as Chairman and Honorary Secretary respectively for the Session 2021-2023. Er.Asok Kumar K proposed vote of thanks. 31 members participated the AGM.



A Century of Service to be Nation

New Office Bearers for Kerala State Centre



Chairman
Er. Asok Kumar K, FIE
(F-1110256-AS)



Honorary Secretary
Er. Roy Mathew, MIE
(M-1443385-AG)

New Office Bearers for Local Centres

Kollam Local Centre

11th AGM held on Saturday 30th October 2021



Chairman
Er. K. Rajan, FIE
(F-1266264-EL)



Honorary Secretary
Dr. Sheeba R, MIE
(M-1439760-EL)

Kochi Local Centre

50th AGM held on Saturday 23rd Oct 2021



Chairman
Er. P.A. Salahudeen, FIE
(F-1199295-MC)



Honorary Secretary
Dr. K.S. Babu, FIE
(F-1238406-CV)

Trichur Local Centre

21st AGM held on Sunday 24th October 2021



Chairman
Prof. (Dr) C.P. Sunilkumar, FIE
(F-1205699-MC)



Honorary Secretary
Dr. Kurien E.K., FIE
(F-1160539-AG)

Palghat Local Centre

39th AGM held on Saturday 30th October 2021



Chairman
Er. Madhana Mohan K, FIE
(F-1216224-EL)



Honorary Secretary
Prof. (Dr) C. Pradip, MIE
(M-1256453-EL)

Kozhikode Local Centre

22nd AGM held on Wednesday 27th October 2021



Chairman
Er. Surendranathan K, FIE
(F-1091745-MR)



Honorary Secretary
Er. K. Shaju, MIE
(M-1469341-CV)

Battery, the King of Modern Grid

K. Sivadasan FIE, FIV Deputy Chief Engineer (Rtd), KSEBL

(The views expressed are that of the author)

Competition is the hallmark of the present day world. India learnt from history that countries that commanded larger shares of energy generation have an edge in the competition. Energy security is the backbone for perpetual development. Energy is a master resource which has the ability to catapult or cripple a growing economy. Electricity policy is of paramount importance. Large scale storage is required to meet the standards prescribed in the Electricity (Rights of consumers) Rules 2020.

GDP, which is linked to energy consumption, is one of the indicators of development. To raise GDP every nation tries every possible means to generate and consume maximum energy. In this wild run for energy, nations turned to fossil fuels and Uranium. Incidentally, fossil fuels and Uranium are limited in availability and the world turns towards renewables. In the search for alternate sources of energy, solar sources have emerged as a viable alternative. Solar resources are free, abundant, predictable, perpetual and now are getting cheaper than fossil. As of now (2021) solar power is the cheapest and is falling.

India is a frontrunner in the climate war and is committed to set the target of 40% RE in the energy mix by 2030, adding 450GW of RE capacity with its inherent limitation - the intermittency. Large-scale RE penetration with proliferation of V2G systems requires substantial energy storage systems to mitigate the intermittency of renewable sources. It seems there is a gap between our energy storage goals and where we are now. The business as usual is not a recipe for 100% transition by 2060, India's target.

Solar and storage are “inextricably linked” technologies. This paradigm can be incorporated in the National Energy Policy of India 2021 which is under preparation. The NEP has to visualize cost-effective, reliable, and longer-lived energy storage systems to truly modernize the grid. Future grid is bidirectional and consists of an infinite number of distributed generators (Rooftop plants), wind turbines, Battery Energy Storage Systems, ‘vehicle to grid’ etc and managed by Artificial Intelligence. Solar-plus-storage will be the fastest emerging technologies in the clean energy space. Costs continue to decline as deployment increases, but the market lacks transparency over drivers and projections

The different types of energy storage can be grouped into five broad technology categories: Batteries, Thermal, Mechanical, Pumped hydro and Hydrogen. Three of the storage technologies are more common - Battery Energy Storage Systems (BESS), pumped hydro and hydrogen. There are twelve types³ of batteries in common use. Recent additions to the list are the Metal-air battery and Flow batteries.

ISRO had developed a technology for Lithium-ion batteries with capacities ranging from 1.5Ah to 100Ah. They have transferred⁴ this technology to Ten Indian Companies to establish production facilities in India to cover the entire spectrum of power storage requirements. This is an advanced battery technology, which would revolutionize the energy storage sector and ISRO expects the ten companies to innovate further on the transferred baseline technology as per specific needs of the market.

The power sector is in the process of a tectonic⁵ change. Fossil fuel energy is on the way out. Solar and wind are the major alternative sources. Battery storage takes the central stage. Energy storage will reach cost parity with conventional technologies and soon its growth will get faster. Global Li-ion battery manufacturing in 2010 was 10GWh, this became 500GWh in 2020 and could exceed 2000GWh in 2025. Batteries of other technologies will also be added to meet demand. The growth can be described as a relay-race and not a competition with each technology. It is a never-ending race holding on to R&D. Battery storage is essential to implement the One Sun One World One Grid vision as in the Morocco-UK Power Project⁶

India promotes Advanced Chemistry Cell (ACC) battery storage. The technology of ACC is not divulged. It is presumed that this has a connection to the battery developed⁷ by The University of Southern California (UCS) in 2012. The Iron-air battery is a technology recently developed and uses commonly available materials, are durable, have good energy density, easily recyclable, non-flammable, environmentally benign and most importantly very cheap. It is reported that the cost is one tenth of a Li-ion battery. India aims to have a manufacturing capacity of 55GW of ACC by 2030 with an outlay of 18000 crores. Driver for the growth is the ‘well-designed’ Production Linked Incentive (PLI) scheme⁸ approved by GOI. The PLI expects intense competition in the battery manufacturing sector and the companies will find ways to innovate, cut battery costs and to invest in R&D. Large scale investment proposals by Arcelor Mittal (100000 crores) and Mukesh Ambani (75000 crores) in Gujarat is pointer. Revolutionary changes can be expected in power system in the coming decades. Boston’s Form Energy, a company developing ultra-low-cost, long-duration energy storage for the grid, signed a contract to deploy⁹ a 1MW/150MWh pilot project in Minnesota. Large group of

investors like Arcelor Mittal, Bill Gate, Bezos etc have invested in Form Energy.

Engineers and scientists are hard at work to develop long duration, cheaper and safe technologies for battery storage. Many findings are published and several types of storage batteries are in the market. A new type of battery is under development that can last for 100,000 charges¹⁰. It may go up to 200,000 charges. Practically it is an ‘infinite’ battery. An amazing technology!! Battery technology is advancing at tremendous pace just like solar module technology. In the beginning the cost of the module was \$1250/- per Watt in 1931 and now it is less than 20 cents per Watt. There is no barrier for technology advancement. Cost of the battery will decline to barrier breaking levels with the vibrant incentive policy (PLI) of GOI.

Energy storage systems will play a major role in grid management. It is a virtual power station that can stabilize frequency in milliseconds in case of grid disturbances. Long duration storage can ensure electricity supply during natural calamities. Engineers and technicians are to be trained to build, operate and maintain the grid with virtual power stations- the Battery Energy Storage Systems. Let them be engaged in R&D in grid management in the new scenario. Let India be a major player in innovation.

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9. Disruptive iron-air grid-scale battery is 10% the cost of lithium <<https://newatlas.com/energy/form-energy-iron-air-battery-bezos/>>
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Kerala State Centre- WEDNESDAY TALKS - Glimpses

06-10-2021: Webinar on “Game Theory In Everyday Life” by Prof. Sudha Balagopalan PhD, Dean Academics, Vidya Academy of Science & Technology.



13-10-2021: Webinar on “The Paradigm Shift in Education” by Prof. Anil B., PhD, Former Principal, Government Engineering College, Bartonhill, Thiruvananthapuram.

20-10-2021: Webinar on “Technological progress A Boon or Bane for Human Society?” by Mr. Philip John, Managing Director, CETRONICS Technologies Pvt. Ltd.



27-10-2021: Webinar on “The Curious Case of Artificial Intelligence & Healthcare: A Boon or An Affliction? - A Neurologist’s Perspective” by Dr. Rajesh Shankar Iyer, Consultant Neurologist & Epileptologist, Kovai Medical Center & Hospitals, Coimbatore.

Trichur Local Centre

19-10-2021: Celebrated World Standard Day 2021 in online mode. Dr. Manu Melwin Joy explained the use of Gamification technique in developing solution for various issues in different fields of life.



04-10-2021: Celebrated World Habitat Day jointly with COST FORD, Nirmithikendra, AEA II Arc. on “Accelerating Urban action for a carbon-free world”. Dr. R.V.G. Menon, Rtd. Principal, Kannur Engg. College



stressed the need for creating awareness among the public regarding emission of green house gases and Dr. K.P. Kannan, Chairman, COST FORD dealt on the need for energy efficient methods in construction and household appliances.

GANDHI JAYANTHI

02-10-2021 : Observed Gandhi Jayanthi by garlanding the portrait of Mahatma Gandhi by Er. N. Rajkumar, Immediate Past Chairman.



WORLD HABITAT DAY

04-10-2021 : Celebrated World Habitat Day 2021 through Google Meet jointly with IEI Kochi Local Centre. Er. E A Abdu, FIE, CEO & Chief Consultant, Envalyu Engineers and Valuers delivered the lecture on ‘Accelerating Urban Action for a Carbon-Free World’.



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Palghat Local Centre

18-10-2021 Celebrated World Standards Day. Er. Rajeev P, Scientist – F & Head, BIS, Kochi Branch Office delivered lecture on ‘Our Shared Vision For A Better World’.



Voice of Kerala Engineers

November 2021



Date of Publication : 07-11-2021

To

If undelivered please return to:

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Disclaimer: The Institution of Engineers (India), Kerala State Centre, as a body, accepts no responsibility for the statements made by individuals.

Printed and published by Er. Asok Kumar K. on behalf of The Institution of Engineers (India), Kerala State Centre. Printed at Akshara Offset, Kunnumpuram, Thiruvananthapuram (Ph: 0471-2471174). Published at IEL-KSC, Visvesvaraya Bhavan, Opposite Kanakakunnu Palace, Thiruvananthapuram. Editor: Er. Sarat Kumar K.