
Report of activities of IEEE IAS Kolkata Chapter for 2016

The IEEE Industry Applications (IAS) Chapter Kolkata organized **seven** technical lecture programmes in **2016**. Altogether, eight lectures, including two distinguished lectures, were delivered in these programs. Details of the above activities are presented the following paragraphs.

- 1. The first Technical Lecture Meeting** was organized on 28th January, 2016, at the Department of Electrical Engineering at Jadavpur University, Kolkata, on the topic “PWM Control of Inverter fed Drives”. The talk was delivered by Prof. K. Gopakumar, Professor and ex-Chairman, Electronic Systems Engineering, Indian Institute of Science, Bangalore, India. The talk discussed the various types of PWM techniques, which are popularly employed in Induction Motor Drives applications, followed by the elements of Space Vector PWM technique. A particular variation of the SVPWM technique, which can be implemented based only on the reference amplitudes, and does not require any look-up table or sine-cosine calculation, was also discussed. It was explained how this technique can be extended for multi-level inverters as well. The talk was attended by 38 participants, including thirteen IEEE members.
- 2. The Second Technical Lecture Meeting** was organized on 9th March, 2016, at the Department of Electrical Engineering at the Indian Institute of Engineering Science and Technology, Shibpur, on the topic “Modern Trends in Electrical Distribution – CESC Perspective.” The talk was delivered by Mr. Debasis Gupta, General Manager – Special Projects, at CESC Limited. The talk deals with issues, related to electrical distribution such as: problems, constraints and innovative solutions in power distribution in a city with space constraints, moving from a network control centre towards a Smart Grid Control Centre, Integration of IT and OT, AMR solutions, AMI/Smart Meter status, MDMS integration, Demand Response, GIS integration, BI & Analytics, Telecommunications systems for WAN and Field Area Networks, Forays in LT Automation & IOT etc. – with examples of practices and plans in CESC. The talk was attended by 24 participants, including three IEEE members.
- 3. The Third Technical Lecture Meeting** was organized on 6th August, 2016 at the Alumni Seminar Hall of the Indian Institute of Engineering Science and Technology, Shibpur, on the topic “Industry Applications – Thermal Power Sector.” The talk was delivered by Mr. Sabyasachi Roy, Consultant and Ex Chief-Manager at WEG Electric (India) Pvt. Ltd. The talk gives the audience an idea regarding the challenges, faced by the thermal power sector in India at present. It focuses on the growing needs to bridge the huge gap between demand and supply –

to embrace more modern technology from Super Thermal to super critical power Generation, highlighting the national importance and growth plan. It also presents some case-studies involving larger motors with new challenging performances with respect to some very typical applications and design and selection of motors thereby. The talk was attended by 43 participants, including three IEEE members.



Mr. Sabyasachi Roy delivering the lecture on 06.08.2016

4. **The Fourth Technical Lecture Meeting** was organized on 13th August, 2016 at the Alumni Seminar Hall of the Indian Institute of Engineering Science and Technology, Shibpur, on the topic "Design and Selection of Motors – An Industrial Perspective." The talk was presented by Mr. Sabyasachi Roy, Consultant and Ex Chief-Manager at WEG Electric (India) Pvt. Ltd. The talk focuses on the various aspects of design and selection of motors. The various factors, which will be highlighted in this discussion as follows:

- Quality of power supply
- Environment and enclosure
- Safe and Hazardous area of operation
- Understanding of special hazardous area motors like non Sparking, Increased safely, Flameproof and Pressurized enclosure motors.
- Load and application- Continuous and intermittent duty motors
- VFD motors and meeting challenge of replacing DC motors with VFD motors
- Synchronous motors typical requirement and application
- Types of coupling
- Types of starting and drives

- Insulation Systems and Impregnation methods
- Cooling systems
- Bearing and lubrication systems
- Vibration and Noise control
- Restrictions imposed due to available source of supply and grid strength
- Meeting Consultants specification for particular segments of industry

The talk was attended by 45 participants, including six IEEE Members.



Mr. Sabyasachi Roy delivering the lecture on 13.08.2016



Prof. K. Mukherjee, vice-Chair, IEEE-IAS Kolkata Chapter, addresses the audience during the IEEE Technical Lecture meeting on 13.08.2016

5. **The Fifth Technical Lecture Meeting** was organized on 7th September, 2016 at the Department of Electrical Engineering at Indian Institute of Engineering Science and Technology, Shibpur, on the topic “Internet of Things & its Future in Technology.” The talk was presented by Dr. Joyanta Kumar Roy, founder chairman and technical advisor, System Advance Technologies Pvt. Ltd.. The main aim of this technical speech was to introduce the fundamental concepts of the Internet of Things and its applications and architectural models. The introduction to the technologies and mechanisms for sensing, actuation, processing and cyber-physical data communication were also discussed along with some basic application. Finally it was ended up with the deployment of Internet of things as combination of Smart online water quality sensors, programmable logic controller based wireless remote terminal unit (RTU) at various points along with Supervisory Control and data acquisition (SCADA) system to provide single point continuous surveillance to potable water from source to the distribution end. A typical application IOT as integrated system for monitoring and control of plant and process parameters in water treatment plant were discussed. The talk was attended by thirty seven participants, including six IEEE Members.



Prof. D. Ganguly, Chair, IEEE-IAS Kolkata Chapter, presenting the certificate of appreciation to the speaker Prof. J. K. Roy during the technical lecture meeting on 07.09.2016

6. **The Sixth Technical Lecture Meeting** was organized on 2nd November, 2016 at the Department of Electrical Engineering at Indian Institute of Engineering Science and Technology,

Shibpur, under the Distinguished Lecture Program Scheme of the IEEE. This lecture program consisted of two technical lectures by two distinguished lecturers. The first talk was on the topic “Energy Efficiency in Electricity Supply Chain” by Mr. A. M. Narayanan, Head, Energy Efficiency Division, Energy Management Centre, Govt. of Kerala, INDIA. The objective of the deliberation was to comprehend Cascade Energy Efficiency Concept, Energy Efficiency Considerations in each component of the ESC, Monitoring and verification of Energy Efficiency of each component of the ESC, Regulatory provisions and significance and Techno-economics of maximising the energy efficiency with respect to minimisation of energy intensity of the economy and mitigation of carbon foot print and enhancement of energy security. The talk was attended by thirty-seven participants, including eight IEEE members.

The second distinguished lecture of this program was on the topic “Solar Energy: Let us open the doors” by Prof. P. S. Chandramohan Nair, Chairman of Educational Activities, IEEE Kerala Section, INDIA. The talk revealed the potential of utilization of direct solar energy. Various conversion techniques for solar thermal and solar photovoltaic were discussed. It included simple devices usable by the public to the larger systems for industrial applications. Some of the latest developments were narrated. A few potential areas for further research were also indicated. The talk was attended by forty-eight participants, including four IEEE members.



Distinguished Lecture by Mr. A. M. Narayanan (left); Mr. Narayanan receiving the plaque and certificate from Prof. D. Ganguly, Chair- IEEE-IAS, Kolkata (right)



Distinguished lecture by Prof. P. S. Chandramohan Nair (left); Prof. Nair receiving the plaque and certificate from Prof. D. Ganguly – Chair – IEEE-IAS, Kolkata Chapter (right)

- The Seventh Technical Lecture Meeting** was organized on 16th November, 2016 at the Department of Electrical Engineering at Indian Institute of Engineering Science and Technology, Shibpur, in association with TEQIP, Phase-II, IEST-Shibpur on the topic “GMD Impacts on Bulk Power Systems.” The talk was presented by Dr. Tapan K. Manna, Technical Consultant, Burns & McDonnell (HVDC and FACTS). This topic described Geomagnetic Disturbance (GMD) and its impacts on bulk power systems. It also discussed a high-level overview of solar storms and its



Prof. A. Roy of the ETCE Dept. of IEST Shibpur and nodal officer TEQIP, Phase-II, handing over the certificate to Dr. Manna (left); Dr. Manna delivering his talk at IEST Shibpur (right)

impacts including the history of solar events, FERC Order on 'Benchmark GMD Event' and plans for GIC (geo-magnetically induced current) monitoring and GMD mitigation against solar events that cause failures of key power assets. The talk was attended by twenty-three participants, including ten IEEE Members.

Other News: The undersigned is glad to inform all the members of the IEEE-IAS Kolkata Chapter that this chapter once again bagged the prestigious "Outstanding Small Chapter - Continuing Performance" award for the previous year.



(Suvarun Dalapati)

Secretary – IEEE-IAS Kolkata Chapter

E-Mail: suvarun@ieee.org

Date: 15.12.2016

DRAFT