



IEEE Canada
Northern Canada Section



IEEE

NORTHERN CANADA SECTION

October 2015

NEWSLETTER

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Officers

| | |
|------------|-------------------|
| Chair | Mooney Sherman |
| Vice-Chair | Rossitza Marinova |
| Secretary | Jim Ellis |
| Treasure | Aly Saleh |

Committee Chairs

| | |
|----------------------------------|-----------------------------------------------------------------|
| Educational Activities | Shafi Khan, Amir Rahemtulla |
| Professional/Career Activities | Kelly Butz |
| Awards/Recognition | John Grylls, Cecilia Wang |
| Membership Development | Amar Bollywar |
| Young Professionals | Shafi Khan, Amir Rahemtulla |
| Graduates of Last Decade | Sagar Lunawat |
| Women in Engineering | Adefeyike Odotayo, Wei Shi |
| Teacher in Service Program | Mooney Sherman, Rossitza Marinova, Amar Bollywar, Sholeh Madani |
| Humanitarian Initiative | Mooney Sherman, Aly Saleh |
| Section Communication | Sholeh Madani, Raheleh Rasimarzabadi, Shahram Fardadvand |
| Life Member | Andy Jones |
| Member at Large | Reza Banaei |
| IEEE Canadian Foundation Liaison | Pankaj Sharma |
| Webmaster | Shahram Fardadvand |

ABOUT US

We aim to promote the vision of the IEEE within the membership in our region through sharing of ideas, attendance at conferences and workshops, and ethical practice. The section supports Chapters, special interest groups, student activities and student awards.

Our mission as the IEEE Northern Canada Section is to assist and improve the electrical, electronic, computer and information technology industries; in Northern Canada, as well as in Canada and the rest of the world by:

1. Providing practical liaisons between academia and the technical workforce, and
2. Advancing the professional standing of our members and their industry.

In addition, in conjunction with IEEE's grassroots mission, we strive to enhance the quality of life for everyone through improved public awareness of the influences and application of the world's technologies.

IEEE-NCS, IAS/PES

Wednesday, January 21st, 2015, 6:00 to 9:00pm

Battery and Chargers for Electrical Substation and Process Back-up

Topics:

- The evolution of stationary batteries, their chemistry and construction, the various technologies available on the market, their respective advantages, disadvantages and failure modes.
- Compare the classic charger model with modern chargers and the various functionalities that have been developed over the last 10 or 15 years.
- Factors that will influence the design of the dc system, including system architecture, component and battery selection.



Speaker:

Yves A. Lavoie, as an active member of the IEEE Stationary Battery Committee, involved with the review of:

- IEEE 1189 Standard on Stationary Battery Selection.
- IEEE 946 Recommended Practice for the Design of DC Auxiliary Power Systems.

Along with other members of the battery charger industry, Yves is also active on a newly opened PAR: P2405 - Standard for the Design of Battery Chargers Used in Stationary Applications. This new Charger Standard is meant to supplement the outdated NEMA PE-5.

YP Speaker:

To promote IEEE's Affinity Group of Young Professionals (YP) there was an opening presentation from an YP Guest Speaker on Harmonic Mitigation. This presentation was covered with the following topic by Pooya Bagheri:

"A Technique to Mitigate Zero-Sequence Harmonics in Power Distribution Systems"

IEEE-NCS, IAS-PES

Friday, February 20th, 2015, 8:30 am to 4:30 pm

Smart Power Flow Controller for Smart Grid Applications**Topics:**

- A high-level overview of various power flow controllers and their features.
- Traditional power flow controllers voltage regulating transformer, phase angle regulator, shunt inductor/capacitor, and series inductor/capacitor; Voltage-Sourced Converter (VSC).
- VSC 6-pulse, 12-pulse, 24-pulse, and 48-pulse harmonic neutralized VSCs.
- Modeling and implementation of the VSC-based technology, comparison of theory, simulation, and field results; special applications of VSC-based technology; Sen Transformer.

Speaker:

Kalyan, a Senior Member of IEEE, has served the organization in many positions. In 2003, he reestablished the Pittsburgh Chapters of the Power & Energy Society, and the Industry Applications Society. Both Chapters received the Outstanding Large Chapter awards for their activities in 2004. Under his Chairmanship, the Pittsburgh Section received the Outstanding Large Section award for its activities in 2005. He has been serving as an IEEE PES Distinguished Lecturer since 2002. Currently, he is serving as the founding Chair of IEEE Pittsburgh Power Electronics Society Chapter and a Member of the IEEE Center for Leadership Excellence Committee (2013, 2014).

**IEEE-NCS, IAS/PES**

Tuesday, March 17th, 2015, 5:30 to 9:00pm

SCADA – The Heart of an Energy Management System**Topics:**

- Typical components and configuration of a SCADA/EMS system
- How a SCADA/EMS differs from an industrial DCS (Distributed Control System)
- How data is collected by the SCADA system from remote sites that can be within a few blocks or hundreds of kilometers away
- How SCADA data is used for real-time decision making, minimizing equipment damage, preventative maintenance and system planning
- Typical EMS advanced applications and historians
- EMS procurement –Benefits of off the shelf “shrink wrapped” versus customized



Speaker:

Doug Van Slyke began his career with Alberta Power (now ATCO Electric) in 1975. He has held various positions at ATCO Electric in Transmission Line Construction, Transmission/Distribution Line Maintenance, the System Control Center, and the SCADA Technologies Group. His current responsibilities include training for the transmission and distribution operators, system analysts and support group users who use and maintain ATCO Electric's SCADA/EMS environment. Doug is a Journeyman Powerline Technician.



IEEE-NCS, IAS/PES

Tuesday, May 26th, 2015, 6:00 to 9:00pm

Industrial Electrical Systems: Design Strategies

Topics:

The presentation discussed some best practices from the perspective of an owner and an EPC, on today's projects with respect to electrical. The opportunities for success on upcoming projects were discussed including offering some best practices from both a project management, and a technical basis. The discussion covered technical items in the areas of design, equipment selection, electrical codes, variances, construction and inspection.



Speakers:

Tim Driscoll, F.IEEE, (BSc.'76) has been employed at Shell Canada in various positions since graduation. Currently retired from Shell, he runs a small engineering firm in Calgary, OBIEC Consulting. He is a member of the Association of Professional Engineers and Geoscientists of Alberta. He is also chair of the Canadian Electrical Code section 62 and the Technical Content Subcommittee on the CSA Objective Based Industrial Electrical Code, and participates on several other Alberta Codes, and CSA, API, IEEE and IEC standards.

D. George Morlidge, P. Eng. is the Chief Electrical Engineer for Fluor Canada Ltd. He has thirty years' experience in operations and consulting engineering in heavy industry in the petroleum, chemical, cogeneration, pipelines, automotive, lumber, mining and food processing sectors in both Canadian and international projects. He is a section subcommittee member for sections 2 and 10, chairman of section 18 of the Canadian Electrical Code, and chairman of PCIC 2017 to be held in Calgary.

IEEE-NCS, AP/MTT Jt.Thursday, July 16th, 2015 12:00 pm to 1:00 pm**Antennas Near Field Theory: A New Fundamental Approach and Impact on Antenna Systems****Topics:**

This presentation described a new fundamental approach to the near field structures around antenna systems and the possible implication on antenna design. Applications to antenna synthesis, MIMO systems design, and other types of antennas for emerging applications were discussed.

Speaker:

Dr. Yahia Antar worked at CRC and NRC in Ottawa before joining the staff of the Department of Electrical and Computer Engineering at the Royal Military College of Canada in Kingston where he has held the position of professor since 1990. Dr. Antar is a Fellow of the IEEE and a Fellow of the FEIC. He serves as an Associate Editor (Features) of the IEEE Antennas and Propagation Magazine and served as Associate Editor of the IEEE Transactions on Antennas and Propagation, IEEE AWPL. In 2015 he was the recipient of the IEEE Canada J. M. Ham Outstanding Engineering Educator Award and the RMC Cowan Prize for excellence in research.



IEEE-NCS

Saturday, August 22th, 2015, 1:00 pm to 5:00 pm

Summer BBQ

Annual IEEE Northern Canada Section Barbeque was held at Emily Murphy Park in Edmonton at August 22 from 1 to 5 pm. This event was free to IEEE members and their families.



IEEE-NCS, IAS/PES

Tuesday, September 22nd, 2015, 5:30 to 9:00pm

Medium Voltage Distribution

Topics:

This Seminar covered Generation, Transmission, HVDC, concept of Electrical Distribution, Electrical Utilities, types of protection in Medium Voltage Distribution, Voltage ratios and the importance of Transformer Impedance, types of Switchgear and Switching Devices used in Medium Voltage Distribution.



Speaker:

Sharif Ahmed is a Senior Manager Business Development in Siemens for Canada. He is a Rotary Scholar and a Gold Medalist from Association of Scientists and Scientific professions. He started his career in AEG-Telefunken and then joined Pauwels International of Belgium. He worked as a Resident Manager of Pauwels in the Middle East managing business in six countries. He moved to Canada and worked for VA-Tech of Austria and then joined General Electric of USA in Canada. At present he works for Siemens Canada as a Senior Manager Business Development for Canada managing Siemens business in Alberta, British Columbia, Saskatchewan, Manitoba, Quebec and Ontario. He is a Senior Member of IEEE and a local committee member of Calgary chapter. He is also a member of CSA Standards committee.



YP Speaker:

To promote IEEE's Affinity Group of Young Professionals (YP) there was an opening presentation from an YP Guest Speaker. This presentation was covered with the following topic by Colin Madsen:
"Faulted Circuit Indicators for Power Utilities Applications by Colin Madsen"

IEEE-NCS, AP/MTT Jt.

Tuesday, September 22nd, 2015, 1:00 pm to 2:00 pm

Design, Analysis, and Applications of Waveguide-Fed Slot Arrays

Topics:

In this talk the design techniques and analysis employing the method-of-moments solution to the pertinent integral equations of the entire planar slot array were reviewed. Examples from recent applications of slot arrays in practical radar and remote sensing systems were presented.

Speaker:

Sembiam R. Rengarajan received the Ph.D. degree in Electrical Engineering from the University of New Brunswick, Canada in 1980. Since then he has been with the department of Electrical and Computer Engineering, California State University, Northridge (CSUN), CA, presently serving as a Professor. His research interests include application of electromagnetics to antennas, scattering, and passive microwave components.

Dr. Rengarajan is a Life Fellow of IEEE and of the Electromagnetics Academy. He has served as an Associate Editor of the IEEE Transactions on Antennas and Propagation (2000-03) and as the Chair of the Education Committee of the IEEE Antennas and Propagation Society (APS). He was appointed as a Distinguished Lecturer by the IEEE APS in 2011. He was the Chair of the Commission B (Waves and Fields) of the United States National Committee of URSI (USNC-URSI) during 2012-14. Presently he serves as the Secretary and Chair-Elect of USNC-URSI.



IEEE-NCS

2015

Awards and Honors

- **Alexandre Nassif (Chair of the PES/IAS Chapter)**

IEEE PES Outstanding Engineer Award

The IEEE PES Outstanding Engineer Award program allows each PES Chapter the opportunity to recognize the outstanding contribution of local engineers to the power engineering profession.



- **Shafi Khan (Chair of the University of Alberta Student Branch)**

The Governor General's Academic Medal

The Silver Medal is awarded for academic excellence to the undergraduate who achieves the highest academic standing in a Bachelor degree program.



Upcoming Events:

IEEE-NCS, AP/MTT Jt.

Wednesday, October 21th, 2015, 11:30 am to 1:00 pm

Bi-anisotropy, Metamaterials and Homogenization

Topics:

This lecture deals with the variety of ways how one is able to characterize and effectively describe the macroscopic dielectric and magnetic behavior of composite materials with given properties of the constituents and the geometrical microstructure. Homogenization principles will be applied to analyze and understand mixtures that display very interesting properties that differ strongly from these of the constituent materials. This is the domain of metamaterials, and the talk will shed light into this new paradigm in electromagnetics.

Speaker:

Ari Sihvola received the Doctor of Technology in 1987 in Electrical Engineering, from the Helsinki University of Technology (TKK), Finland. Besides working for TKK and the Academy of Finland, he was visiting engineer, professor and scientist in a number of institutes and universities. His scientific interests range from electromagnetic theory, complex media, materials modeling, remote sensing, and radar applications, into engineering education research and history engineering and technology. Ari Sihvola is Chairman of the Finnish National Committee of URSI (International Union of Radio Science), Chairman of the Commission B (Fields and Waves) of the international URSI, and Fellow of IEEE. In 1990's, he has served as Chairman of the IEEE AP-MTT Chapter for several years.



IEEE-NCS

Thursday, October 22nd 2015, 5:00 to 7:30pm

Career & Professional Networking Event at Metterra Hotel

Main Speaker:

A Human Resources Professional provided a brief discussion on a topic relevant to Career & Professional Development in the workplace.

For more details for the event or registration questions or concerns please contact Kelly Butz kbutz@magnaiv.com or 780-982-2132 (email preferred)

IEEE-NCS, AP/MTT Jt.

Tuesday, October 27th, 2015, 3:00 pm

Magnetic Resonance and Radio Waves or Scepticism in the Highest of Duties

The IEEE Northern Canada Section Antennas & Propagation Society and the Microwave Theory & Techniques Society (**IEEE NCS APS/MTTS**) joint chapter, along with the **Department of Oncology (Medical Physics division)**, are pleased to announce an upcoming technical seminar on MRI RF technology. The talk will deal briefly with the science, psychology and insights to be gained from a rather bruising encounter with entrenched thinking and excessive specialization.

Speaker:

David Hoult received his degrees from Oxford University and has worked there and at the National Institutes of Health, the University of Utrecht and the National Research Council of Canada – always in the field of nuclear magnetic resonance (NMR) spectroscopy and imaging (MRI). He is the recipient of numerous awards, including the Gold Medal of the International Society of Magnetic Resonance in Medicine, of which he is a founding member. Involved in MRI since its inception in 1974, his research interests cover both the theoretical and experimental aspects of its engineering physics.



IEEE-NCS, IAS/PES

Tuesday, November 17th, 2015, 6:10 to 9:00pm

Practices of Distribution Insulation Coordination

Topics:

- 1) Overview of Presentation
- 2) The Origin and Shapes of Distribution System Surges
- 3) Where Surges Matter and What They Do
- 4) Insulation Systems and How They Go Bad
- 5) History and Application of Distribution Surge Arresters (Over-Voltage Protection)
- 6) Reality Check

For more details for the event or registration questions or concerns please contact Peter Rothwell prothwell@ibgtech.com or Alex Nassif at alexandre.nassif@atcoelectric.com

Speaker:

Thomas C Hartman, P. Eng., has been with ATCO for three years leading the introduction of new technology such as distribution automation, DMS, advanced system engineering, and telecommunications. His career has spanned more than 38 years in the power system industry. Globally, Tom is recognized for having over thirteen US, Canadian, and international patents. He has served on IEC, IEEE, and ANSI standards committees for the development of international surge arresters standards for which he was awarded the IEEE Standards Medallion. Currently Tom serves as the chairman for the CSA standard C22.2 No. 269. Canada's first standard for the design of low voltage surge arresters.

IEEE IAS ESTMP

Monday to Wednesday, March 14-16, 2016

IEEE IAS ESTMP 2016 Workshop

IEEE IAS ESTMP Workshop Committee is pleased to officially announce the opening of registration for **IEEE IAS ESTMP 2016 Workshop in Edmonton to be held March 14-16, 2016**. The Conference will be followed by Tutorials on March 16, 2016. You can now register for the conference at:

<https://www.microspec.com/reg/ESTMP2016/>

The IEEE IAS ESTMP Workshop provides a forum for exchanging and advancing industry knowledge in the areas of electrical safety, engineering design, and system reliability as well as the implementation and execution of Mega Projects. The Workshop focus will be to share innovative concepts, successes as well as lessons learned in the areas of:

- 1- Advancing the application of state of the art knowledge and best practices,
- 2- Stimulating innovation in creating the next generation of technology and
- 3- Design and implementation of Mega Projects.

This Workshop is not a training course, but a forum for exchanging ideas and practical experiences involving knowledge, safe work practices, philosophies, electrical technology, and mega-projects experience that are changing the electrical discipline in industry. Targeted audiences include but are not limited to people involved in electrical in these areas of interest:

- Facilities construction, operation and maintenance
- Facilities and process design
- Engineering services
- Training and continuing education
- Regulations, codes and standards
- Forensics
- Risk management
- Temporary Power
- Human error and human factors
- Project management
- Project Engineering
- Safety
- Contractors

This is a prime opportunity to meet and greet your peers in a casual setting. Whether you're an industry leader or new graduate, networking is an important part of everyone's career. The IEEE IAS ESTMP Committee takes a great pride in providing a high quality conference while keeping registration and participation costs reasonable. To learn more about ESTMP 2016 and for the conference program, you can visit <http://sites.ieee.org/estmp/>.