



"The purpose of IEEE Houston Section Continuing Education on Demand is to provide modern practical industrial power application topics that supplement the daily work activities of the practicing graduate electrical engineer. The seminars are intended to stimulate further study and discussion for learning continuance throughout the working career. Topics apply to electrical power systems as relates to oil and gas, petro-chem, co-gen, marine offshore, etc. Instructors are application engineers, manufacturing specialists and expert consultants who provide a blend of diverse engineering perspectives."

Seminar Schedule

Sept 24 - Microgrids

The content of the presentation will include:

- Introductions
- Microgrid example projects
- Ingredients for successful microgrid projects: Microgrid Design, Procurement, and Installation
- Microgrid Technology requirements
- Define Resiliency
- Centralized or Distributed: Scale-ability of relay based microgrid architectures
- Relay based reconnection at a PoCC
- Relay based Seamless islanding at a PoCC
- Frequency Response Characteristics
- Low Inertia & Inverter Challenges to Microgrids
- Visualization examples
- Modelling methods and results
- What is the future of microgrid controls, protection, and automation systems

Presenter Scott Manson (SEL)

Scott Manson received his M.S.E.E. from the University of Wisconsin–Madison and his B.S.E.E. from Washington State University. Scott is the engineering services technology director at Schweitzer Engineering Laboratories (SEL), Inc. Scott provides consulting, design, and commissioning services on control and protection systems worldwide. Scott is a registered professional engineer in five states and holds eleven patents.

Oct 8 - Relay Fundamentals

The presentation will review basic power system protection concepts, and discuss the role of protective relays in the power system. Concepts to be addressed include:

- Protection principles: Speed, Security, Selectivity, Reliability, Simplicity
- Basic Protective system architecture: fundamental components of protection system including circuit breakers, instrument transformers, control power systems, etc.
- Digital Relay fundamentals: review of basic digital relay concepts from I/O to relay filtering techniques
- Summary of basic relay application: applying overcurrent protection

***Presenter* Derrick Haas (SEL)**

Derrick Haas graduated from Texas A&M University with a B.S.E.E. He worked as a distribution engineer for CenterPoint Energy in Houston, Texas, until 2006 when he joined Schweitzer Engineering Laboratories, Inc. Derrick has held several titles including field application engineer, senior application engineer, team lead, and his current role of regional technical manager. He is a senior member of the IEEE and involved in the IEEE Power System Relaying Committee (PSRC).

Oct 22 - Packaged Substations

This presentation will cover packaged substation applications utilizing prefabricated buildings (E-Houses, PDCs). The contents of the presentation will cover building design considerations, major power distribution equipment (MV/LV), supporting auxiliary systems, integration of customer free issued equipment, substation automation, FAT & IFAT and project execution. This session is recommended for industry professionals involved in project management, procurement, EPC design or End User operation of single supply packaged substations.

***Presenter* Dwaraka Padimiti (ABB)**

Dwaraka Padimiti has been working at ABB for 4 years and currently holds a Regional Business Development Manager / Field Application Engineering position in Electrification Products Division. He received his BSEE degree from Osmania University; and his MS degree in Electrical Engineering with Power Systems specialization from Missouri University of Science & Technology in Dec 2006. He also received his MBA degree from Rice University in May 2015. Dwaraka has spent most of his career in electrical distribution, power and control, including one-line distribution design, 480V to 38KV application and overall power distribution design. He has about 13 years of professional work experience as an electrical consulting and design engineer working at various EPCs such as WorleyParsons, Bechtel and Burns & McDonnell in Houston area. He is an IEEE IAS member and a certified Professional Engineer in State of Texas since 2010.

***Presenter* Andres Illarramendi (ABB)**

Andres Illarramendi have been responsible for leading and implementing the best practices for the design of E-Houses and electrical substations for ABB projects and equipment for the IAEN in the United States of America. Andres is part of our Technical Advisory Group for IAEN USLBL working on the future direction of solutions for project pursuits, market segments, and internal and external training programs. Andres joined ABB in 2012 as a Project Manager for the OGC BU, IA division. During his career at ABB, Andres held various positions during challenging ABB transformations and worked as Electrical Engineering Manager for the OGC, IA and also as an Interface Manager for the IAEN business. Before Joining ABB, Andres worked as an R&D Project Manager at Hewlett Packard in the Datacenter Infrastructure branch, as an Engineering Manager for Nextec Energy, a leading power inverters and chargers manufacturing and services company, also Lectrus Corporation an E-House manufacturer. Andres have leaded projects with the US Department of Energy and supported the US Department of State as an Senior Advisor for the Irak and Afghanistan Reconstruction Team. Andres holds a bachelor degree in Electrical and Electronics Engineering from DeVry University and also studied Finance and Accounting at Rice University in Houston, Texas.

Nov 5 - Medium Voltage Circuit Breaker Testing Standards

IEEE C37.04, C37.06, and C37.09 for 2019. What's Changed and What to be Concerned About.

The 2019 revisions to the high-voltage circuit breaker standards are complete and have made some major changes to the documents that will affect how circuit breakers are specified and tested. The traditional document group showing the basis of ratings, the ratings, and the test procedure as three different standards has changed. New rating terminology has been introduced with significant changes to the testing procedures. Because these documents cover a broad range of voltage classes that encompass different interruption technologies, the changes have, in some cases, unintentionally caused issues. This presentation will identify the changes and areas where these changes require updates to purchase specifications.

***Presenter* Mike Wactor (Powell)**

(M'86-SM'99) received the B.S.E.E. degree in electrical engineering from the University of South Carolina in 1980. He has worked with the design of distribution switchgear and motor control since graduation. He joined Powell Electrical Manufacturing Company in 1992 as a Senior Design Engineer and became the Technical Director for Powell Industries Product Development in 2010. He is a senior member of the IEEE, a PES and IAS member, a member of the Switchgear Main Committee, Switchgear Assemblies Subcommittee, and currently serves as the Standards Coordinator for the PES Switchgear Committee. He is the chairman for the working group for IEEE C37.20.2 "Standard for Metal-Clad Switchgear" and C37.20.7 "Guide for Testing Medium-Voltage Metal-Enclosed Switchgear for Internal Arcing Faults". He also serves on a number of additional working groups under the IEEE SA Subcommittee. He received the IEEE Standards Medallion in 2016 for his work to standardize arc fault testing for switchgear. He is a contributing author to the "Standard Handbook for Electrical Engineers" and has authored numerous papers. He holds a U.S. patent for the design of a Voltage Transformer Disconnect Grounding System. Mr. Wactor is a Registered Professional Engineer in the state of Texas.

***Presenter* Ted Burse (Powell)**

Ted A. Burse (M'89-SM'03) He began his professional career in 1974 with Ohio Transformer working in the circuit breaker repair and calibration area. He joined Ar buckle Electric, Houston, Texas in 1976 as the switchgear shop foreman. He joined Powell Industries in 1979 as an engineer in the R&D area, and became Manager of R&D in 1993. In 1999 he became the Product Line Manager, Replacement Products for the Powell Apparatus Service Division. In 2014 he became the Director of R&D. Mr. Burse is currently serving as Vice Chair of the IEEE Standards Association Standards Board. He is also the Chairman of the Procedures Committee. He also served as Chairman of the Review Committee from 2013 through 2015. Mr. Burse served as Member-at-Large, Standards, for the IEEE PES Governing Board in 2014 and 2015. He is also currently serving as the IEEE PES Standards Coordinating Committee Chairman and member of the IEEE PES Technical Council. He is a member of the IEEE PES Switchgear Committee and served as Chairman in 2007 and 2008. He is also a member of the Switchgear Assemblies Subcommittee where he served as Chairman in 1997 and 1998.

Jan 14&15 – GROUNDING, BONDING, LIGHTNING PROTECTION AND SURGE PROTECTION CERTIFICATION TRAINING

This course provides an overview of electrical grounding, bonding, lightning protection, and surge protection. Electrical engineering principles, relevant utility and commercial and industrial grounding designs and the incorporation of lightning protection and surge protection devices will be discussed.

***Presenter* Chris Barcey (nVent ERICO)**

Chris Barcey is the application engineering team lead for nVent ERICO. He has been part of nVent ERICO engineering for five years and has intimate knowledge of the brand's products and applications. Chris has been involved in the design, development and high voltage testing of surge protective products to UL and IEEE standards. Chris received his bachelor of science in electrical engineering from Youngstown State University.

***Presenter* Martin Havelka (nVent ERICO)**

Martin Havelka is nVent ERICO's grounding and facilities electrical protection expert, supporting nVent ERICO globally for 18 years He is a member of technical committees for IEEE 80, 1246, 998, and 81 as well as AREMA. Martin received an associate of science in electronics from the Polytechnic Institute in Prague, as well as a bachelor of science in electrical engineering and MBA from Cleveland State University.

***Presenter* Andrew Ritosa (nVent ERICO)**

Andrew Ritosa is applications engineer for all product lines for nVent ERICO and nVent ERIFLEX. He has designed systems for variety of lightning protection, surge protection and grounding applications. Andrew graduated from Case Western Reserve University with a bachelor of science in electrical engineering.

***Presenter* Greg Martinjak (nVent ERICO)**

Greg Martinjak is product development engineer for nVent ERICO. He has designed systems for a variety of surge protection and grounding applications. He serves as a participating member on several task forces for UL 1449's Standards Technical Panel (STP) and has performed research for Wright Patterson Air Force Base, IEEE, IEC and LPI standards. Greg graduated from the Ohio State University with a bachelor of science in electrical and computer engineering.

Jan 28&29 – Harmonic Analysis and Harmonic Filter Design – Become an expert

With an ever increasing use of non-linear load devices, whether for motor starting or for controlling industrial processes, understanding harmonics, their relationship to power factor correction, and their impact on the power system is essential. Furthermore, understanding harmonic filter design, common filter types used (C-HP, HP, Notch, single-stage, multi-stage, and more), the ability to design and to specify a harmonic filter systems to meet industry standards, understanding filter configuration options (open-air, E-House, metal-enclosed) and commonly employed components, switching, control, and protection options is essential to any engineer who might be involved with the application or specification of large drive systems, power factor correction, harmonic filtering, and/or motor start solutions that utilize RVSS and VFD drive starters (LCI drives). Also covered is the age-old solution of using capacitor banks for starting large motors by leveraging transient free switching technology, advanced digital relaying, and high-speed communication.

Presenter Paul B. Steciuk (NEPSI)

Paul B. Steciuk is president and co-founder of Northeast Power Systems, Inc. (NEPSI), a global supplier of medium-voltage metal-enclosed power capacitor banks and harmonic filter systems. Mr. Steciuk has grown the company and provided engineering and product support to EPC's, owners and operators of small and large industrial, commercial, renewable, and utility power systems through NEPSI for over 24 years. With over 30 technical articles and white papers to his credit, Mr. Steciuk is an expert in harmonic analysis, filter design and application, power system analysis, and manufacturing design.

Feb 11&12 - Reliability Fundamentals

Seminar attendees will learn about the principles of improving asset management and maintenance decisions by using proven reliability engineering principles. Attendees will be advised how the application of reliability fundamentals improves equipment reliability in the manufacturing and process environments. In addition, you will also obtain the knowledge of when and how to use the principles of reliability engineering to prevent equipment failures.

Presenter Donald Dunn (IEEE)

Donald Dunn is a Principal Consultant within the Refining, Chemical and various other industries and a recognized Industry Leader. Throughout his career, Donald has demonstrated a track record of more than 25 years of hands-on experience in delivering technological innovation to improve processes and procedures and to enhance revenue, reliability, efficiency, and market share. He is currently a senior member of the IEEE and the ISA. He has authored or co-authored in excess of forty technical papers of which twenty-five were for the IEEE peer reviewed conference, journals, transactions and magazines. Many of these technical papers had a focus on equipment and/or facility reliability. In addition, Mr. Dunn has been an invited author and presenter at over fifty various IEEE and ISA International, National and Regional conferences. He has held numerous leadership positions within the IEEE and the ISA since 1996. He is a member of the IEEE, ISA, NFPA, API and IEC standards working groups and has held numerous leadership positions in those organizations. In 2016, he received their "Outstanding Technical Contribution Award", which recognizes the dedicated technical contributions of the individual to the Petroleum and Chemical Industry Committee (PCIC).

Feb 25&26 - Motor Starting

Night 1:

Starting of AC motors and handling of inrush currents is one of the practical challenges that operators have with them. During this presentation, the impacts of high inrush current on the motor and power grid will be discussed. Various commonly used starting methods will be presented and advantages and disadvantages of each method will be discussed. Finally, basics and operation of reduced voltage soft starters will be reviewed. Practical considerations using real world examples will be presented.

Night 2:

The first part of this presentation focuses on one of the special applications of VFDs which is use of them for AC motor starting purposes. This application is known as synchronous transfer. Advantages and disadvantages of this method will be discussed. Single motor and multiple motor sync transfer applications will be introduced. Real world examples will be presented. The second part of this presentation focuses on one the main challenges with VFDs which is heat-management. Various methods, with a focus on medium voltage VFDs, will be reviewed.

Presenter Navid Binesh (Benshaw)

Navid Binesh graduated with MASc degree in Electrical Engineering. His academic research and professional career have been focused on variable frequency drives, their design, and applications. He is an IEEE senior member focusing most of his attention on education of industry professionals and IEEE IAS, PES and PEL members.

March 10&11 – Battery Technology

Industrial standby battery technology comparison, Lead-acid vs .Ni-Cd vs. Li-ion, with design considerations, sizing, maintenance, and safety. Advances in Li-ion technology for UPS and industrial applications.

Presenter Dan Youngs (SAFT)

Dan Youngs has spent over 25 years working in the Energy and Power Industry. Having experience in Utility Power Plants, Electric Vehicles and Energy Storage. Dan has worked on energy storage systems based on chemistries including Lead Acid, Li-LFP, Li-NMC, LTO, Nickel Metal Hydride, Nickel Sodium as well as Ultra-Capacitors. Dan is currently specializing in the application of advanced battery systems for Standby Applications. Dan holds a Bachelor's degree in Electrical Engineering from the Watson School of Engineering at Binghamton University, New York State. He also been Chairman of the SAE Bus and Truck Battery Standards Committee. He is Listed as inventor on patent PCT/US2011063695, ESS for Hybrid Electric Vehicle, Specialties: Li-Ion Energy Storage Systems, Hybrid Vehicle, Power, Energy.

Presenter David Hood (SAFT)

David began his electrical background in the U.S. Navy's advanced electronics program. He has been in the standby battery and power industry since 1988 including 8 years' experience with UPS and charger OEM's in both technical, engineering, sales, and management capacities. He has worked as a battery sales rep for 18 years representing the Saft battery line and has been a Saft America regional sales manager for a total of 4 years. David is a member of the IEEE Power & Energy society and is on the standards development working group for various battery and DC system related standards in the Energy Storage and Stationary Battery Committee. David has a BS in Computer Information Systems from University of Houston Clear Lake in Texas.