FUNDAMENTALS OF ELECTRIC DISTRIBUTION

August 22-23, 2016
Hilton Orrington/Evanston
Chicago, IL

FEATURING A TOUR OF S&C ELECTRIC COMPANY’S ADVANCED TECHNOLOGY CENTER*
August 23, 2016
OVERVIEW

This course is designed to provide a practical overview of electricity distribution systems for nonelectric power engineers or individuals who are new to the industry. It will discuss how new distribution systems are designed, planned, and regulated. Important topics such as new technologies, two-way communication systems, distributed energy resources, microgrids, and smart grids, also will be discussed.

This course will provide attendees with state-of-the-art knowledge on the basics of classical and new distribution systems, technologies, and performance evaluation tools for rate-making and other important decisions.

LEARNING OUTCOMES

• Define and describe the major concepts of electricity distribution
• Explain considerations that impact distribution planning and design
• Analyze the importance of, and factors that can impact distribution performance
• Examine the organizations that regulate the electric distribution industry
• Identify the main drivers for new distribution and discuss the many challenges of distribution planning and operation
• Discuss smart grid technologies that will make the distribution system more efficient and reliable
• Gain a strong foundation on the basic concepts and equipment used in modern distribution
• Discuss and develop performance evaluation standards
• Identify the role of interoperability standards
• Recognize challenges and opportunities for utilities in the future

INSTRUCTORS

Jerry Josken / Senior Consultant / UC Synergetic

Jerry holds a BS in Electrical Engineering Technology from the Milwaukee School of Engineering and a MBA from North Central College.

During his 30+ year career with Eaton’s Cooper Power Systems Jerry has served as Test Engineer, Design Engineer, Distribution Protection Engineer and Field Application Engineer. Passed leadership positions include Chair of IEEE Rural Electric Power Conference (2012) and GLEMS Distribution Equipment /Controls (2013-2014). Presently, Jerry coordinates UCS Training Programs.

Kent Hoffman, PE / Senior Consultant / UC Synergetic

Kent Hoffman, PE, is a Senior Consultant for UC Synergetic. Kent, a graduate of NC State University, brings over 40 years of experience in distribution system protection, standards, and reliability. During his career at Progress Energy, Mr. Hoffman held various technical leadership positions, including Manager of Distribution Planning & Coordination, where he was responsible for standards and practices related to distribution system protective coordination. He has served on numerous technical committees and currently assists with UC Synergetic training programs and projects.
AGENDA

Monday, August 22, 2016

8:00 - 8:30 a.m.  Registration and Continental Breakfast
8:30 a.m. - 5:00 p.m.  Course Timing
12:00 - 1:00 p.m.  Group Luncheon

I. Devices and Components
   Familiarization with the major infrastructure components of an electric utility system and the functions of each in delivering electricity to the end customer. Typical major components from the generator to the customer’s electrical delivery will be reviewed:
   • Distribution system models: customers, corporate, system
   • Functions of devices
     o Source (substation)
     o Lines (OH and UG)
     o Power and distribution transformers
     o Regulation devices
     o Protective and switching devices
     o Distributed generation
     o Auxiliary devices
     o Demand and loads

II. Introduction to Distribution Systems
   • State of global power delivery systems
   • Emerging distribution systems
     o Definitions
     o Why, what, and how?
   • Vision, challenges, and opportunities

III. Performance Indices
   • The key performance indices are:
     o Efficiency: line losses are the key
     o Voltage regulation
     o Unbalance
     o Reliability
     o Power quality
     o Economy
     o Safety
     o Regulatory
     o Environmental
   • How to quantify or measure the performance of the system
   • Neutral current and voltage effect
AGENDA

Monday, August 22, 2016 (Continued)

IV. Performance Evaluation Methods
   • System modeling using network analysis
   • Single-phase, three-phase, and multiphase models
   • Three-phase power flow analysis
     o Example on two-feeder power flow analysis
   • Load and demand modeling
   • Voltage regulation
     o Control devices: capacitors, reactors, transformer tap changers
     o Voltage regulation with fixed and switched capacitors
     o Example on voltage regulation improvement

Tuesday, August 23, 2016

8:00 - 8:30 a.m.   Continental Breakfast
8:30 – 11:00 a.m.  Course Timing

V. System Protection
   • System protection overview
   • Fault causes
   • Types of faults
   • Device models
   • Fault analysis by symmetrical components
   • Protective device coordination
   • Existing vs. future (smart) distribution systems
   • Existing vs. future (smart) protection systems
   • Advanced protection philosophy and design
     o Influence and impact of rapid changes
     o Challenges and opportunities
     o Impact of operations

TOUR

Tuesday, August 23, 2016

Featuring a tour of S&C Electric Company’s Advanced Technology Center*

Tour Timing: 11:00 a.m. – 2:00 p.m.
Boxed Lunch will be provided.

*Due to the proprietary nature of the tour, the tour will not be open to equipment manufacturers as determined by EUCI.
INSTRUCTIONAL METHODS

This course will feature PowerPoint presentations and in-class exercises.

REQUIREMENTS FOR SUCCESSFUL COMPLETION OF PROGRAM

Participants must sign in/out each day, and be in attendance for the entirety of the course, to be eligible for continuing education credit.

CREDITS

EUCI has been accredited as an Authorized Provider by the International Association for Continuing Education and Training (IACET). In obtaining this accreditation, EUCI has demonstrated that it complies with the ANSI/IACET Standard which is recognized internationally as a standard of good practice. As a result of their Authorized Provider status, EUCI is authorized to offer IACET CEUs for its programs that qualify under the ANSI/IACET Standard.

EUCI is authorized by IACET to offer 1.0 CEUs for the course.

EVENT LOCATION

A room block has been reserved at the Hilton Orrington/Evanston, 1710 Orrington Ave., Evanston, IL 60201, for the nights of August 21-23, 2016. Room rates are $189 single & double, plus applicable tax. Call 1-847-866-8700 for reservations and mention the EUCI course to get the group rate. The cutoff date to receive the group rate is March 16, 2015, but as there are a limited number of rooms available at this rate, the room block may close sooner. Please make your reservations early.

PROCEEDINGS

The proceedings of the course will be published, and one copy will be distributed to each registrant at the course.

REGISTER 3 SEND THE 4TH FREE

Any organization wishing to send multiple attendees to these conferences may send 1 FREE for every 3 delegates registered. Please note that all registrations must be made at the same time to qualify.
PLEASE REGISTER THE FOLLOWING

☐ DISCOUNTED REGISTRATION FOR ATTENDING BOTH FUNDAMENTALS OF ELECTRIC DISTRIBUTION AND DISTRIBUTION OVERCURRENT PROTECTION
   AUGUST 22-24, 2016: US $2195
   EARLY BIRD ON OR BEFORE AUGUST 5, 2016: US $1995

☐ FUNDAMENTALS OF ELECTRIC DISTRIBUTION ONLY
   AUGUST 22-23, 2016: US $1395
   EARLY BIRD ON OR BEFORE AUGUST 5, 2016: US $1195

☐ YES, I WOULD LIKE TO ATTEND THE TOUR OF S&C ELECTRIC COMPANY’S ADVANCED TECHNOLOGY CENTER*
   AUGUST 23, 2016
*Due to the proprietary nature of the tour, the tour will not be open to equipment manufacturers as determined by EUCI.

How did you hear about this event? (direct e-mail, colleague, speaker(s), etc.)

Print Name                                    Job Title

Company

What name do you prefer on your name badge?

Address

City                                            State/Province    Zip/Postal Code    Country

Telephone                                    Email

List any dietary or accessibility needs here

CREDIT CARD

Name on Card                                    Account Number

Billing Address                                 Billing City       Billing State

Billing Zip Code/Postal Code                    Exp. Date         Security Code (last 3 digits on the back of Visa and MC or 4 digits on front of AmEx)

OR Enclosed is a check for $_________________ to cover _____________ registrations.

Substitutions & Cancellations
Your registration may be transferred to a member of your organization up to 24 hours in advance of the event. Cancellations must be received on or before July 22, 2016 in order to be refunded and will be subject to a US $195.00 processing fee per registrant. No refunds will be made after this date. Cancellations received after this date will create a credit of the tuition (less processing fee) good toward any other EUCI event. This credit will be good for six months from the cancellation date. In the event of non-attendance, all registration fees will be forfeited. In case of conference cancellation, EUCI’s liability is limited to refund of the event registration fee only. For more information regarding administrative policies, such as complaints and refunds, please contact our offices at 303-770-8800. EUCI reserves the right to alter this program without prior notice.

EUCI's Energize Weekly e-mail newsletter compiles and reports on the latest news and trends in the energy industry. Newsletter recipients also receive a different, complimentary conference presentation every week on a relevant industry topic. The presentations are selected from a massive library of more than 1,000 current presentations that EUCI has gathered during its 28 years organizing conferences.

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