

FUNDAMENTALS OF OVERHEAD DISTRIBUTION SYSTEMS

December 4-5, 2017
Hyatt Regency Phoenix
Phoenix, AZ



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

OVERVIEW

This course will introduce and provide non-technical people with the basics of the overhead distribution system and all the general components that make up the system. Issues that are involved in the design, construction, operation, reliability, protection and maintenance of overhead distribution, as well as safety awareness will be discussed. It will allow people who are not distribution engineers to know enough to oversee projects or simply have a better understanding of the system.

LEARNING OUTCOMES

- Review the power system from generator to customer and where distribution fits in
- Discover how a distribution system works and system configurations
- Expand on the functions of the system through reliability, power quality, protection and voltage regulation
- List the various equipment components that make up the system
- Review the what, the why, and the how of system construction
- Discuss the operation considerations of protection, reliability and safety
- Explain the differences in a comparison of overhead and underground systems
- Explore challenges in system operation
- Review utility approaches to improving reliability
- Discuss methods and practices for modernizing the overhead distribution system

COURSE INSTRUCTORS

Wes Spencer

Senior Project Engineer, POWER Engineers, Inc.

Wes is a Senior Project Engineer for POWER Engineers, St. Petersburg, FL and holds a BSEE from Georgia Institute of Technology and an MBA from Florida Institute of Technology.

Wes has over 40 years of experience with distribution systems including over 20 years with a Florida utility, private consulting, and working with POWER Engineers. He has developed standards, taught distribution design, directed line crews, and led multiple complex design projects. He has served in leadership positions on numerous technical committees. He is currently technical lead for major distribution projects with POWER Engineers.

Rod Ratcliff P.E.

Consultant, POWER Engineers, Inc.

Rod is a Project Engineer for POWER Engineers, Fort Worth, TX and holds a BS in Electrical Engineering from Texas A&M University, College Station, TX.

During his 10 year career as a consultant in the Power Systems Utility industry Rod has served in a wide variety of power systems engineering design fields including: Low Voltage Electrical System Design, Arc Flash Studies, Substation Design and Ground Testing, Transmission Line Design, Transmission Line SCADA Control and Metering, Overhead and Underground Distribution Line Design, Distribution System Studies and Planning, as well as Reports and Studies for Need, Placement, and Planning of New Substations and New Transmission Lines as required by the Public Utility Commission(PUC). Presently, Rod works in the field of Distribution Design and is also involved in corporate internal training.

COURSE TIMING

MONDAY, DECEMBER 4, 2017

12:30 – 1:00 pm **Registration**

1:00 – 5:00 pm **Course Timing**

AGENDA

- Distribution – What is it?
 - o Review of power system from generator to customer
 - o Major parts of a distribution system
 - Feeders
 - Branch lines
 - Overhead
 - Underground
 - Network
- How Distribution Systems Work – Part I
 - o Voltages
 - o Single phase and three phase
 - o Transformers
 - o Typical system configurations
 - Feeders – radial and looped
 - Descending hierarchy
- How Distribution Systems Work – Part II
 - o Power quality
 - o Reliability
 - o Voltage regulation
 - o System protection
- Design Considerations
 - o Equipment
 - Poles – types, selection
 - Conductors/wires – types, selection
 - Devices/ Pole attachments
 - Transformers
 - System regulation
 - o Construction – what is that?
 - Pole types, sizes
 - Primary configurations
 - Guys and anchors
 - Equipment
 - o Construction – why is it built like that?
 - Codes, statutes
 - Industry standards
 - Individual utility standards
 - Line crew considerations
 - o Construction – why is that line there?
 - System loads
 - Reliability

COURSE TIMING

TUESDAY, DECEMBER 5, 2017

8:00 – 8:30 am **Continental Breakfast**

8:30 am – 5:00 pm **Course Timing**

12:00 – 1:00 pm **Group Luncheon**

AGENDA

- Operating Considerations
 - o System protection
 - What it is
 - Line devices
 - Modeling and real world
 - o Reliability
 - o Safety
 - Stray voltage
 - Line crews
- Overhead vs Underground
 - o Understanding underground distribution
 - o Why isn't everything underground?
 - o Comparing costs
 - o Comparing pros and cons
- Challenges in Operating Distribution Systems
 - o Public perceptions and pressures
 - o Distributed generation
 - o Disruptive loads
- Utility Approaches to Improving Reliability
 - o Storm hardening
 - o System reconfigurations
 - o Automated switching
 - o Automated outage reporting
 - o On-line outage status
- Modernizing the System
 - o Microgrids
 - o Predictive technology
 - o Line sensors
 - o System modeling
 - o R&D projects



“The EUCI Overhead Distribution Systems course was very informative. The presenters kept the course flowing at a good pace. They were engaging and kept my interest by inserting stories from their past experiences in this industry.”

Regional Manager, City Light & Power

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.

INSTRUCTIONAL METHODS

Case studies and PowerPoint presentations will be used in this course.

IACET 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 Hyatt Regency Phoenix, 122 N 2nd St, Phoenix, AZ 85004, for the nights of December 3-5, 2017. Room rates are \$179 plus applicable tax. Call **1-602-252-1234** for reservations and mention the EUCI event to get the group rate. The cutoff date to receive the group rate is November 3, 2017 but as there are a limited number of rooms available at this rate, the room block may close sooner. ***Please make your reservations early.***

REGISTER 3, SEND THE 4TH FREE

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



Please make checks payable to: "PMA"

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PLEASE REGISTER

FUNDAMENTALS OF OVERHEAD DISTRIBUTION SYSTEMS COURSE:

December 4-5, 2017: US \$1395,
 Early bird on or before November 10, 2017: US \$1195

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

Phone Email

List any dietary or accessibility needs here

CREDIT CARD INFORMATION

Name on Card Billing Address

Account Number Billing City Billing State

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

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 November 3, 2017 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 course 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 (201) 871-0474.