

FUNDAMENTALS OF OVERHEAD DISTRIBUTION SYSTEMS

December 3-4, 2018
Hyatt Regency Atlanta
Atlanta, GA

“

“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



TAG US #EUCIEvents
FOLLOW US @EUCIEvents



EUCI is authorized
by IACET to offer
1.1 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.

AGENDA

MONDAY, DECEMBER 3, 2018

8:00 – 8:30 am **Registration and Networking Breakfast**

8:30 am – 5:00 pm **Course Timing**

12:00 – 1:00 pm **Group Luncheon**

Distribution – What is it?

- The power system from generator to customer
- Major types of distribution systems
 - o Overhead
 - o Underground
 - o Network
- Typical distribution system configurations
 - o Feeders
 - o Branch lines
 - o Descending hierarchy

How Distribution Systems Work – Electrical Part I

- Voltages, amps, resistance
- Single phase and three phase
- Power and impedance

How Distribution Systems Work – Electrical Part II

- Power quality
- Voltage drop, flicker, harmonics
- Power Factor
- Voltage Regulation

Design Considerations - What is That?

- Major materials
 - o Poles, crossarms, conductors, equipment
- Smaller materials
 - o Primary and secondary materials
 - o Nuts, bolts, washers, and more
- Pole top assemblies
 - o Horizontal and vertical configurations
 - o Alternate construction configurations
- Guying
 - o Guy attachments, guy wire, anchors
- Transformers
 - o What they are - how they work
 - o Three phase configurations
 - o Photo quiz
- Special electrical equipment
 - o Regulators, auto transformers, capacitors, metering



“This class was great. It is perfect for anyone wanting to know about overhead electricity distribution. Highly recommend it.”

Manager AMI
Deployment,
Commonwealth Edison



“This was a very valuable course. I wish that I had taken it 10 years ago.”

Director of Research &
Energy Tech, Vectren

AGENDA

MONDAY, DECEMBER 3, 2018 (CONTINUED)

Design Considerations - Why is it Built That Way?

- Codes and regulations
 - o National Electrical Safety Code (NESC)
 - o Other regulatory agencies
- Mechanical and electrical
 - o Equipment sizing
 - o Conductor sag, tension, clearance
- Operations
 - o Utility and industry standards
 - o Line crew considerations
- Storm hardening
 - o Definitions
 - o Stronger or more resilient?

Design Considerations – Why Are Those Lines Where They Are?

- System analysis
 - o Load flow and power quality
 - o Line and equipment loading
- System planning
 - o Projecting future new loads
 - o Modeling the future system
- Other considerations



“Very good course for non-technical persons in the distribution field. I would also recommend for new engineers in the field. Gave a good overview into what’s on a distribution network, why it’s there, what it does and some of the emerging things in the industry.”

Distribution Engineer,
The Barbados Light &
Power Company



“As a DOT Utility Engineer, it is good to have a general knowledge of various utility systems, design requirements, and operating requirements. This class provided that for overhead distribution without going too deep into the engineering and design. I would recommend this course to anyone wanting to understand the overhead distribution side of the world that does not have an electrical background or understanding.”

Utilities Engineer, Delaware Department of
Transportation

AGENDA

TUESDAY, DECEMBER 4, 2018

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

8:30 am – 12:00 pm **Course Timing**

Operating Considerations – What Does it Take to Keep the Lights On?

- System Protection
 - o What line faults are
 - o Devices used to handle fault conditions
 - o System protection schemes
- Special situations
 - o Distributed generation
 - o Disruptive loads
- Public perceptions and pressures

Improving Reliability - What are Utilities Doing?

- Switching and protective devices
- Automated switching and reconfigurations
- Automated outage reporting
- Storm hardening

Modernizing the System - Can Old Dogs Learn New Tricks?

- Energy sector R&D
- Utility programs

Safety - Saving the Most Important Topic for Last

- Electrical considerations
 - o Public safety
 - o Employee safety
 - o Stray voltage



“Recommend this course for everybody. It is a good refresher on overhead distribution.”

Utilities Engineer, CPUC



“Great class for anyone entering the distribution engineer field. Well-rounded course covering the many aspects to design distribution.”

Engineering and Planning Supervisor, Bear Valley Electric



“The best resource I have seen for comprehensive introduction to the overhead distribution system.”

Industry Director, NEMA

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 1.1 CEUs for the course.

EVENT LOCATION

A room block has been reserved at the Hyatt Regency Atlanta, 265 Peachtree Street, Atlanta, GA 30303, for the nights of December 2-3, 2018. Room rates are \$175 plus applicable tax. Call **1-404-577-1234** for reservations and mention the EUCI event to get the group rate. The cutoff date to receive the group rate is November 2, 2018 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.



“There was a lot of great information and something for everyone from someone new to the industry to someone that has worked in the industry for years.”

Project Manager, PieperLine



Please make checks payable to "PMA"

EVENT LOCATION

A room block has been reserved at the Hyatt Regency Atlanta, 265 Peachtree Street, Atlanta, GA 30303, for the nights of December 2-3, 2018. Room rates are \$175 plus applicable tax. Call **1-404-577-1234** for reservations and mention the EUCI event to get the group rate. The cutoff date to receive the group rate is November 2, 2018 but as there are a limited number of rooms available at this rate, the room block may close sooner. **Please make your reservations early.**

PLEASE REGISTER

FUNDAMENTALS OF OVERHEAD DISTRIBUTION SYSTEMS COURSE:

DECEMBER 3-4, 2018: US \$1395,

Early bird on or before November 16, 2018: 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 2, 2018 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