

 EUCI COURSE

DISTRIBUTION TRANSFORMER FUNDAMENTALS

April 26-27, 2017
EUCI Offices, 4601 DTC Blvd
Denver, CO



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

OVERVIEW

This course has been developed at the request of electric utilities and engineering consulting firms for their staff to gain practical experience with distribution transformers. The instructor was specifically selected for his skills at presenting complex distribution utility topics in a way that people can understand, remember and apply. The 80/20 rule, Rules of Thumb, Best Practices, Lessons Learned, and Traps to Watch Out are just a few of the themes in this class. The real-world examples and practicality of this course will save the students from countless errors down the road.

This course is intended to be a hands-on, practical course for engineers and consultants. The main purpose of this course is to provide attendees with the knowledge that they need in order to make informed decisions regarding transformer sizing and selection as well as who the major vendors are. The intent of this course is to help companies save time and money. This course will provide attendees with reference materials that they will be able to continually go back to for guidance long after the course is completed, however, this course is not "death by power point" and will encourage discussion and allow attendees to customize the training to meet their educational needs.

LEARNING OUTCOMES

- Discuss transformer theory and calculations
- Compare transformer types
- Identify primary and secondary winding connections
- Determine appropriate transformer sizes for various projects
- Discuss key IEEE standards regarding distribution transformers
- Identify common distribution transformer losses and efficiencies
- Discuss specification writing recommendations and traps to avoid
- Identify best practices and lessons learned



"Very professionally handled, great content, good depth, industry expertise essential. Easy to register, friendly."

Director of Engineering, ASCO Power Technologies

COURSE TIMING

WEDNESDAY, APRIL 26, 2017

8:00 - 8:30 am **Registration and Continental Breakfast**

8:30am - 4:30 pm **Course Timing**

12:00 - 1:00 pm **Group Luncheon**

PROGRAM AGENDA

- Transformer theory and calculations
- Transformer types
 - o Conventional & CSP
 - o Overhead and pad-mount
 - o Other
 - o 1Ø and 3Ø
- Physical attributes
 - o IEEE Standards
 - o Design criteria (BIL, clearances, etc.)
 - o Enclosure integrity
 - o Cover retention
- Options and accessories
 - o Gauges
 - o Pressure relief
 - o Switches
 - o Valves
 - o Relays
 - o UL and FM listing
- Nameplate interpretation
 - o Voltage ratings and nomenclature
 - o Winding configurations
 - o Temperature rise
 - o Cooling class
 - o Impedance
- Winding ratios
 - o Taps
 - o Multi-ratio transformers
- Primary and secondary winding connections
 - o Wye, Delta, Open Wye, Open Delta, etc.
- Cluster-mounting (banking) of 1Ø transformers
- Load estimating
 - o Residential
 - o Commercial
 - o Industrial
 - o Characteristics
 - o The art of estimating loads
- Allowable loading on a transformer
 - o Considerations
 - o Overloading

COURSE TIMING

THURSDAY, APRIL 27, 2017

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

8:30 am - 12:00 pm **Course Timing**

PROGRAM AGENDA

- Allowable loading on a transformer
 - o Considerations
 - o Overloading
- Transformer sizing
 - o Formulas for various configurations
 - o Harmonics
- Inrush considerations
 - o Motor load
 - o Medical equipment
 - o Welders
- Protection
 - o Over-current
 - o Over-voltage
- Fault current calculations
- Losses and efficiencies
 - o DOE compliance
- Ferroresonance (and how to prevent it)
- Insulating liquid options
- Specification writing recommendations and traps to avoid
- Best practices
- Lessons learned

INSTRUCTOR

Thomas Callsen, PE

Project Manager, Weldy Lamont Associates

Thomas Callsen has over 30-years of related utility experience. During his 25-years at Commonwealth Edison Company (ComEd), Thomas held numerous engineering roles culminating as a Principal Engineer/Consulting Engineer in the Distribution Standards department where he was responsible for distribution transformers, capacitors, fuses, reclosers and distribution automation hardware. In 2006 Thomas received DistribuTECH's prestigious "Project of the Year Award" for his "Distribution Center in a Box" substation. In 2009 he received the award again for industry's first real-time overhead fault indicator communicating over a mesh network radio system. (Both products are now commercially available.) He received a US patent for the invention of the DC in a Box transformer design.

In 2010, Thomas joined Weldy Lamont Associates where he is the Project Manager for a rural electrification project in West Africa. This project includes construction of over 4,000 miles of overhead distribution lines serving over 2,000 rural communities in Ghana. This project received the 2012 African Energy Award for the "Rural Electrification Project of the Year". Thomas has expanded his training to the electric utilities in Ghana where he has incorporated several of the industry's best practices into the country's overhead distribution line designs.

Thomas is a Senior Member of the IEEE and an active member of the IEEE Transformer Committee that writes the industry standards for transformers in North America. Thomas holds a BSEE from the University of Wisconsin – Milwaukee and is a licensed Professional Engineer.

REQUIREMENTS FOR SUCCESSFUL COMPLETION OF PROGRAM

Participants must sign in/out each day and be in attendance for the entirety of the course.

INSTRUCTIONAL METHODS

Case Studies, Power Point presentations and Classroom exercises will be used in this course.

PROCEEDINGS

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

EVENT LOCATION

EUCI Offices

4601 DTC Blvd. Suite 800
Denver, CO 80237

NEARBY HOTELS

Hyatt Regency Denver Tech Center

7800 E. Tufts Ave
Denver, CO 80237
Phone: 303-779-1234
0.3 miles away

Denver Marriott Tech Center

4900 S. Syracuse St
Denver, CO 80237
Phone: 303-779-1100
0.7 miles away

Hilton Garden Inn Denver Tech Center

7675 E. Union Ave
Denver, CO 80237
Phone: 303-770-4200
0.7 miles away

Hyatt Place Denver Tech Center

8300 E. Crescent Parkway
Greenwood Village, CO 80111
Phone: 303-804-0700
0.9 miles away

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.

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REGISTER 3, SEND THE 4TH FREE

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

REGISTRATION
to register [CLICK HERE](#) or

Call: 201 871 0474
fax: 253 663 7224
email: [register@pmaconference.com/](mailto:register@pmaconference.com)
web: <http://pmaconference.com/>
Mail: POB 2303 Falls Church Va 22042

Please make checks payable to: "PMA"

EVENT LOCATION

EUCI Offices

4601 DTC Blvd. Suite 800
 Denver, CO 80237

See nearby hotels on page 5

PLEASE SELECT

- DISTRIBUTION TRANSFORMER FUNDAMENTALS**
 COURSE: APRIL 26-27, 2017: US \$1395,
 Early Bird on or before APRIL 7, 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 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 March 24, 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.