EUCI
COURSE

SUBSTATIONS FOR NON-ENGINEERS

July 16-17, 2019
Hilton Toronto/Markham Suites
Conference Centre & Spa
Toronto, ON

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AUTHORIZED IACET PROVIDER

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

OVERVIEW

Substations are one of the major components of any electrical distribution system. They are also one of the more expensive elements, so understanding the role of substations and their importance is critical to understanding how the entire system works to cost effectively deliver electricity to the end user.

Distribution substations and transmission stations take a number of years to bring on on-line to supply electrical demand. The impact of the shift to electric vehicle charging and the ever-increasing use of computer technology, makes predicting and keeping pace with the increasing demand a major aspect of electrical utility engineering. System planning, designing, construction, and commissioning are parts of the effort required to supply electrical demand.

Aimed at non-technical individuals, this course will provide a basic understanding of electrical grid system in Ontario from generation to use in the home, as well as a comprehensive look at the basic systems and components that comprise transmission stations and distribution stations. This review will include examples and discussions of high voltage switching, energy metering, transformers, switchgear, relay and control systems, SCADA systems, and high voltage cables.
The intent is to offer anyone not already familiar with the substations, a better understanding of the design, operational, and safety aspects that are considered by the typical substation engineer.

Future courses are planned that cover other important aspects of electrical utility engineering, such as system planning, as well as overhead and underground distribution engineering.

LEARNING OUTCOMES

- Gain an understanding of power grid components and their basic functions
- Gain a basic understanding of transmission and distribution substations through the use of typical drawings and diagrams
- Understand the basic components and systems within each type of station
- Understand the impact of design on system reliability and outage restoration
- Discuss operational and safety aspects to be considered for stations
- Develop a basic understanding of stations project scheduling, construction, and commissioning

WHO SHOULD ATTEND

- Maintenance and operations staff
- Transmission and distribution contractors
- Engineering and design consultants
- Non-electrical engineers
- Transmission and distribution operators

> ***"This was a very good course for someone with my experience and knowledge. I learned a lot about substations and feel like I have a more well-rounded knowledge of substations."***
>
> Civil Engineer, Shive-Hattery

AGENDA

TUESDAY, JULY 16, 2019

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

8:30 am – 5:00 pm **Course Timing**

12:00 – 1:00 pm **Group Luncheon**

- Introductions and a review of learning expectations
- Review the Learning Objectives
- A Brief History of the Electrical Grid and the various power system components
- Transmission Stations
- Typical station designs and configurations
- Typical voltages and capacities
- A review of typical components and systems
  - Switchyard structures and components
    - Air Break Disconnect Switches
    - HV circuit breakers
    - HV circuit switchers
    - HV Metering components
    - Transformers an tap changers
  - Switchgear Building and components
    - Switchgear alternatives,
    - breakers,
    - cables,
    - relay and control
    - Auxiliary support systems
      - Station service
      - Secondary oil containment
      - Cable duct banks, manholes, pulling chambers
- Distribution Stations
  - Typical station designs and configurations
  - Typical voltages and capacities
  - A review of typical components and systems
    - Switchyard structures and components
      - Air Break Disconnect Switches
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    - Cables
    - Relay and control
    - Auxiliary support systems
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      - Secondary oil containment
      - Cable duct banks, maintenance/pulling chambers

> ***"Nice overview about substations."***
>
> Senior Engineer Test Group, ComEd

> ***"Great course. Very informative and educational."***
>
> Intern, Graycor

AGENDA

TUESDAY, JULY 16, 2019 (CONTINUED)

- Station Design Aspects
  - Drawing symbology and industry standard terminology
    - Detailed review of typical engineering drawings
  - System reliability and maintainability
    - Review the definitions of each and the discuss the major factors affecting these measures
  - Safety features
    - Isolation for work protection
    - Safe work permits
    - Safety Management programs
  - Basic review of protection and control systems

WEDNESDAY, JULY 17, 2019

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

8:30 am – 12:00 pm **Course Timing**

- Operational Aspects
  - Control Room activities
  - Work protection policies and procedures
  - Device naming practices and conventions
- Project Planning and Scheduling
  - Typical delivery times for equipment
  - Review of current manufacturers
  - Typical project scheduling
- Wrap up and Review

> ***"Time well spent to understand the basics of substations."***
>
> Project Manager, MMR

INSTRUCTOR

Ron LaPier, P. Eng.

Vice President, Engineer, Costello Utility Consultants

Ron LaPier is a professional electrical engineer with more than 30 years' experience in the design, operation and management related to distribution systems. For more than six years, he was responsible for managing the engineering and operations for an Ontario distribution utility. Ron has worked with several LDCs on various design projects, system studies, and system planning. Some of the LDCs he's worked with include: Innisfil Hydro, Five Nations Energy, Veridian Connections Ltd., Ottawa River Power Corp., London Hydro, PowerStream, Burlington Hydro, Woodstock Hydro, Westario Power, Enersource, Waterloo North Hydro, Entegrus (formerly Chatham-Kent Hydro), and Erie Thames Powerlines. He's also worked with telecommunications companies for third party attachment projects. He is very familiar with Ontario Regulation 22/04 and the application of the USF standard design drawings.

REQUIREMENTS FOR SUCCESSFUL COMPLETION OF PROGRAM

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

INSTRUCTIONAL METHODS

Case studies, PowerPoint presentations, and group discussion will be used in this event.

EVENT LOCATION

A room block has been reserved at the Hilton Toronto/Markham Suites Conference Centre & Spa, 8500 Warden Ave, Markham, ON L6G 1A5, Canada, for the nights of July 14-18, 2019. Room rates are $175 CAD, plus applicable tax. Call **+1 905-470-8500** for reservations. The cutoff date to receive the group rate is June 21, 2019 but as there are a limited number of rooms available at this rate, the room block may close sooner. ***Please make your reservations early.***

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.

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 INFORMATION

Mail Directly To:
EUCI
4601 DTC Blvd., Ste. 800
Denver, CO 80237
OR, scan and email to: **conferences@euci.com**

WWW.EUCI.COM
p: 303-770-8800
f: 303-741-0849

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PLEASE REGISTER

◯ **SUBSTATIONS FOR NON-ENGINEERS COURSE**
JULY 16-17, 2019: $1695 CAD + 13% HST ($1915.35 CAD)
EARLY BIRD on or before June 28, 2019: $1495 CAD + 13% HST ($1689.35 CAD)

ENERGIZE WEEKLY

Energize Weekly is EUCI's free weekly newsletter, delivered to your inbox every Wednesday. We provide you with the latest industry news as well as in-depth analysis from our own team of experts. Subscribers also receive free downloadable presentations from our past events.

◯ Sign me up for Energize Weekly

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?

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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 June 14, 2019 in order to be refunded and will be subject to a CAD $295.00 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 303-770-8800.
EUCI reserves the right to alter this program without prior notice.