Distribution Overcurrent Protection

October 22 – 24, 2019

Denver, CO

What is this course about?

This course focuses on the application of protective devices for electric distribution systems including device coordination, reach, location, and selection, with the goal of maximizing system reliability. The training will utilize practical examples to reinforce the classroom concepts. Pike Engineering training is vendor-neutral and focused on the technical engineering protection issues, not any specific manufacturer's equipment or device. The course includes the following:

- Review of modern distribution system overcurrent protection and sectionalizing practices
- Overview of fault calculations, impedance, and the per-unit system
- The impact of system design, equipment selection, and protection practices

It is recommended for attendees to bring an engineering calculator to class. Smart phones with scientific calculator functions would also serve this purpose.

Who should attend?

Distribution engineering and technical personnel of any experience level who desire to gain a better understanding of distribution system protection or need a review of protection and sectionalizing practices. Anyone seeking an overview of contemporary protection practices and a review of calculations used to compute fault currents and reliability impacts will find this course helpful.

Instructor's Bio

Kent Hoffman, PE, is a Senior Consultant for Pike Engineering. Kent holds a BS in Electrical Engineering from NC State University. His 40+ years of experience has focused on distribution system protection, standards, and reliability. During his career at Progress Energy, he held various technical leadership positions, including Manager of Distribution Planning & Coordination, where he was responsible for standards and practices related to distribution system planning and protection.

John Gajda, PE, is an Engineering Manager at Pike Engineering. John holds BS and MS degrees in Electrical Engineering from the Univ. of Arkansas and NC State, respectively; his 29 years of technical experience have been focused in the areas of system protection and generator interconnections. In recent years John served as Director of DER Technical Standards at Duke Energy and was responsible for leading and creating many new standards and practices for generator interconnections. John is also a frequent guest lecturer at NC State University.

Jerry Josken is a Senior Consultant for Pike Engineering. 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 in a variety of engineering positions. Past leadership positions include Chair of IEEE Rural Electric Power Conference (2012) and GLEMS Distribution Equipment /Controls (2013-2014).

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Course Outline

Overcurrent Protection Fundamentals

- Calculating Impedance
- Symmetrical Components Review
- Fault Calculation (per unit system)
- Temporary/Permanent Faults
- Phase/Ground Faults
- Time-Current Characteristics

Protective Equipment

- Device Ratings & Standards
- Fuses
  - Expulsion
  - Current Limiting
- Reclosers
  - Dual timing characteristics
  - Design Options
  - Controls and Setting
- Relay-Controlled Circuit Breakers
  - Design Options
  - Relays
    - Electromechanical
    - Microprocessor based
- Sectionalizers
  - Applications
  - Role in Protection Scheme

Distributed Generation

- Fault Current Contributions
- Islanding
- Direct Transfer Trip

Device to Device Coordination

- Fuse/Fuse
- Fuse/Recloser
- Recloser/Recloser
- Recloser/Circuit Breaker
- Sectionalizer/Recloser
- Fuse/Sectionalizer/Recloser

Underground Protection

- OH vs. UG protection philosophy
- Fused switchgear
- Fault Interrupters
- Padmount Switchgear Configurations
- Automation Throw Over

System Reliability

- Reliability Indices
  - SAIFI, SAIDI, etc.
- Predicting reliability

Sample Problems

- System Modeling
- Fault Current Calculation
- Reading Time-Current Curves
- Recloser/Fuse Coordination
- Recloser/Sectionalizer Coordination
- Calculating reliability Indices

Class Schedule:

- 2.5 days in duration
  - Tuesday & Wednesday 8:30AM to 4:00PM
  - Thursday 8:30AM to noon

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Course Location

Renaissance Boulder Flatiron Hotel
500 Flatiron Boulevard
Broomfield, CO 80021 USA

Suggested Hotel

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500 Flatiron Boulevard
Broomfield, CO 80021 USA
Phone: 303-464-8400

https://www.marriott.com/hotels/hotel-rooms/denir-renaissance-boulder-flatiron-hotel/

Course Registration

Course tuition is $1495.00 per person. Tuition includes course material, refreshment and lunches on Tuesday and Wednesday.
Register on-line at: https://conta.cc/2XSvytv
Hotel accommodations, transportation and other incidentals will be the student's responsibility.

Cancellations received after October 14, 2019 will receive a credit that can be used for tuition on a future Pike Engineering Course. The credit is good for one year and is transferable with the same company. In the unlikely case of a course cancellation Pike Engineering's liability is limited to refund of the course registration fee only.

Professional Development Hours

Attendees will receive a certificate of completion at the end of the course for 17 Professional Development hours. Licensed Professional Engineers seeking continuing education credits may use the certificate to satisfy professional development requirements. Pike Engineering is a registered continuing education provider with Florida and North Carolina Board of Professional Engineers. Pike Engineering Courses have never been rejected as valid profession development hours by any state PE Board.

Tuition Discounts

Current Pike Engineering clients are eligible for a tuition discount. Any organization registering 4 or more attendees on a single course receive a 25% discount. Discount Codes are also available for engineering students and faculty as well as federal and state employees.

Contact Jerry Josken (cell:919-348-3432 or email: jjosken@pike.com) to qualify to tuition discounts or learn more about in-house courses for your organization.