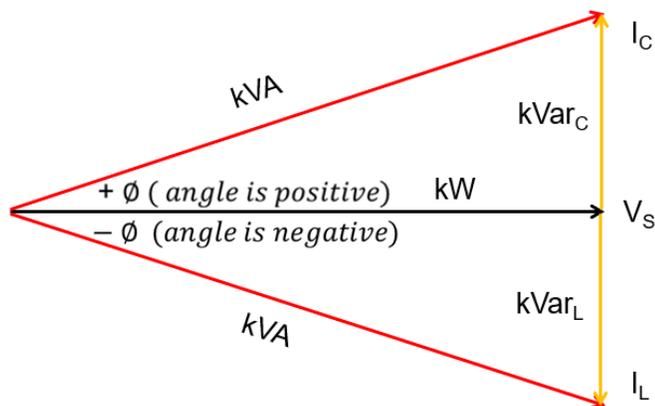


# Distribution Volt/VAr Management

Louisville, KY  
June 18 – 20, 2019

## What is this course about?

Power Factor Correction and Voltage Regulation are essential components for distribution system efficiency and power quality. This course introduces attendees to these concepts and moves quickly into the characteristics and application for power capacitor and voltage regulators then expands to provide information that will be helpful in specifying features and accessories for both devices. Upon completion of the course students will be capable of diagnosing distribution feeders for the proper sizing and placement of this equipment.



## Who should attend?

Distribution system managers, engineers and technical personnel of any experience level that have a need to understand efficiency and power quality issues will benefit from this course. Those individuals responsible for the application and operation of power capacitors and voltage regulators will find this course helpful.

## Continuing Education Credits

Upon completion, attendees will receive a certificate for 17 Professional Development Hours (PDH). Pike Engineering Course have never been rejected by any state PE Board as continuing education

## Instructor Bios:

Chris Sticht, is a Senior Consultant for Pike Engineering. Mr. Sticht is a specialist in utility system planning, load analysis, planning software, underground, solar and Smart Grid. Chris has extensive background in power deliver planning, design, operations and protection. His background includes work on transmission systems, distribution systems, substations, and commercial building electrical systems. He has managed teams of engineers, designers and electricians. His experience includes consulting, contracting, work at two power flow software companies, and at several major utilities. He holds a MSEE from the University of Washington and a BSEE from Georgia Tech.

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 position. Past leadership positions include Chair of IEEE Rural Electric Power Conference (2012) and GLEMS Distribution Equipment /Controls (2013-2014). Presently, Jerry coordinates Pike Engineering Training Programs.

# Course Outline

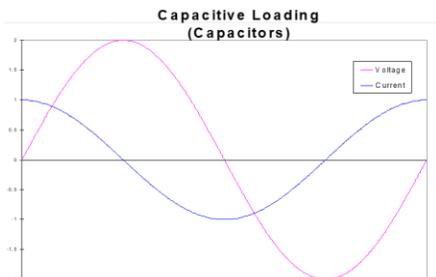
Classes are held 8:30AM to 4:00PM CDT Tuesday and Wednesday  
8:30AM to noon CDT on Thursday

## Volt/VAr Fundamental Calculations

- Resistance, Reactance, Impedance
- The Power Triangle
  - KW, KVAR, KVA
- System Loss Calculations
  - Reducing System Losses
  - Increasing Circuit Capacity
- Voltage Profile Analysis
- Volt/VAr Strategy

## Power Capacitors

- Characteristics & Application Factors



- Overcurrent Protection
  - Expulsion Fuses
  - Current Limiting Fuses
- Switch Capacitor Banks
  - Switches
  - Sensors
  - Back to back switching concerns
  - Cap Controls
  - Time, Temp, Voltage Current, VAr
  - Zero voltage closing controls

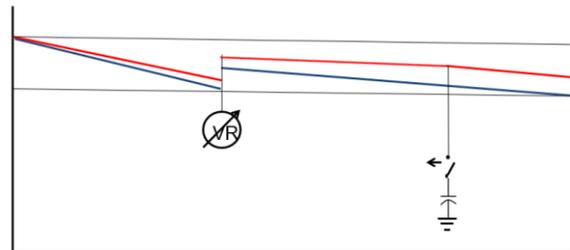
Monitoring equipment for capacitor banks

## Voltage Regulators

- Characteristics & Application Factors
- VR Schematic & Nameplate
- VR External Components
- VR Controls
  - Setting, BW, TD, LDC
  - Features
  - Add Amp/Load Bonus
  - Reverse Power Operation
- Bypassing Voltage Regulators

## Placement of Voltage Regulators & Capacitors

- Reg to Reg Coordination
- Reg to Cap Coordination
- Switching schemes for Capacitors



## Overvoltage Protection for Caps and VRs

### Special Application Considerations

- Dispersed Generation
- Auto Feeder Reconfiguration

### Padmount Volt/VAr equipment

- Padmount Capacitor Banks
- Padmount Voltage Regulators



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### ***Course Registration***

The course tuition is \$1495 per person. Tuition will include course materials, refreshments, and lunches on Tuesday and Wednesday. Any company with four or more attendees will save 25%. Contact Jerry Josken (jjosken@ucseng.com) for more information.

Hotel accommodations, transportation and other incidentals will be the student's responsibility.

[Click here to register online](#). Cancellations received after June 10, 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 within the same company. In the unlikely case of course cancellation, Pike Engineering liability is limited to refund of the course registration fee only.

For additional information about this course, other Pike Engineering course offerings, or on-site pricing, please contact Jerry Josken at (919) 348-3234 or via e-mail at: [jjosken@pike.com](mailto:jjosken@pike.com).

### ***Course Location***

This course will be held at Aloft Hotel Downtown Louisville.

Address: Aloft Hotel  
102 West Main Street  
Louisville, KY 40202  
Phone: 502-583-1888

### ***Lodging***

A block of rooms has been reserved for this seminar at Aloft Hotel in Louisville, KY. [Click here](#) to be forwarded to the hotel reservation site.