

Siemens Power Academy TD

# Industrial Power Systems Applications

PSEC 580

## At a glance

The efficient design and continuous modernization of plants is a crucial factor in order to secure sustainable business success in all industries. The objective of the **Industrial Power Systems Applications** course is to provide participants with a basic understanding of power system analysis that will enable them to make the best decisions across the lifecycle of their plant and equipment – from initial project planning through operation and maintenance or for expansion of the existing plant.

**PSEC 580** course participants will:

- Review fundamentals of power systems analysis
- Discuss electrical load and generator models for power flow and dynamic performance studies
- Explore electrical characteristics and modeling of transformers, transmission lines, cables, and other industrial power system equipment
- Review power flow solution methods
- Discuss power flow applications, including contingency analysis, network sensitivity factors, reactive power and voltage control
- Understand the basics of voltage control and explore the effects of voltage variations on industrial equipment
- Delve into the specifics of voltage regulation techniques, equipment, and operational considerations
- Explore the application, operation and placement of capacitor banks for reactive power support
- Understand the basics of the symmetrical components method to solve unbalanced faults
- Review fault analysis methods for faults involving ground

- Review short circuit study data requirements, methods, network modeling, and applicable standards
- Understand the ANSI and IEC short circuit calculation procedures
- Discuss the means for reducing short circuit current
- Review motor types and operation, and explore motor starting analysis in depth
- Review the fundamental characteristics of harmonic distortion, sources and effects of harmonics, harmonic modeling issues and procedures, and harmonic mitigation techniques.

Upon completion of this course, participants will have a theoretical knowledge of design and operation of a modern industrial power system and will be able to apply problem solving strategies to their plant network.

## Prerequisites

This course is intended for electricity distribution and industry engineers who are responsible for the supply of electrical energy to process and manufacturing facilities.

## Course structure

This is a three-day course. Material is presented in both morning and afternoon sessions for a total of six hours of daily instruction. Standard course hours are 9:00 a.m. to 4:00 p.m. each day.

**To view the PSEC 580 Course Schedule on the web:**

[https://siemens.coursewebs.com/siemens/pageCourseInfo.aspx?Course\\_ID=PSEC\\_580](https://siemens.coursewebs.com/siemens/pageCourseInfo.aspx?Course_ID=PSEC_580)

### Instructors

All courses offered through Siemens Power Academy are developed and taught by leading industry engineers. In addition to their proven instructional ability, our engineers have advanced degrees complemented by first-hand knowledge and experience solving power system problems throughout the world.

### Continuing Education Units (CEUs), Professional Development Hours (PDHs):

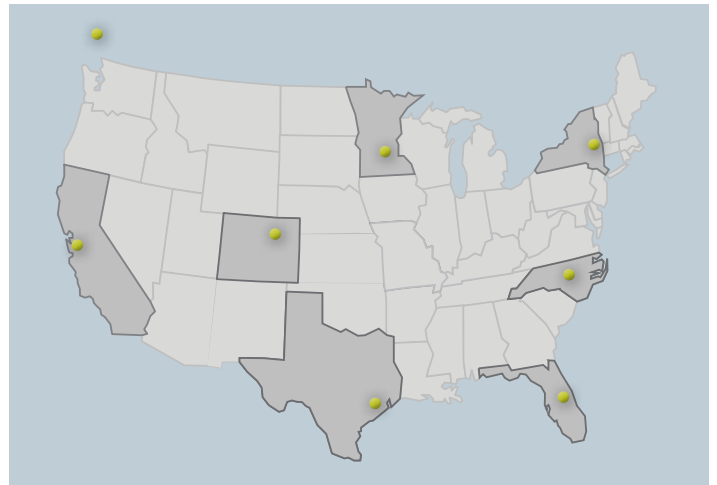
Licensed engineers, on a voluntary or mandated basis, attend continuing professional education for licensure renewal to ensure competency. All courses offered through Siemens Power Academy meet the requirements for CEUs and PDHs.

- Continuing Education Units (CEUs) are the nationally recognized units for recording participation in professional development and noncredit educational programs. Participants completing this course will be awarded CEUs based on the instructional hours of the course: one CEU is awarded for 10 classroom hours of instruction.
- Professional Development Hours (PDHs) – Continuing education training for the Professional Engineer (PE) – that needs to earn annual Professional Development Hours (PDHs). Through our instructor-led training, participants earn one PDH for each one hour of instruction. The participant is responsible for maintaining records of courses taken in support of licensure.

### Convenient training locations

The course is scheduled on a regular basis at Siemens offices located throughout North America, including:

- Burlington, Ontario, Canada
- Houston, Texas, USA
- Littleton, Colorado, USA
- Minnetonka, Minnesota, USA
- Mountain View, California, USA
- Orlando, Florida, USA
- Schenectady, New York, USA
- Wendell, North Carolina, USA



### Client site and custom training

All courses are available for presentation at any client's location by special arrangement. At client sites, it is recommended that sufficient computer terminals be available to enable a fully interactive and productive class, if applicable. Client site courses can also be tailored to address specific topics of local importance.

### Contact us

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