

Overvoltages and Insulation Coordination

Training Course

Industry Need

This course provides engineers with a fundamental understanding of transient phenomena common to electric power systems. The material is especially suited for those who simulate transients with tools such as EMTP, those who analyze waveforms from transient recorders, those who conduct failure analysis, and those who design and specify transmission and distribution systems and equipment.

Objectives

The main objective of this course is to improve the participant's understanding of power system transient and overvoltage events such as faults, switching and lightning surges. The participant will exit the course with greater ability to analyze waveforms from EMTP type simulations or from transient recorders. The participant will also have a stronger understanding of insulation coordination and surge arrester applications.

Prerequisites

The course is structured for electrical engineers that have some familiarity with electric power system analysis. Prior experience with transients is not necessary.

Course Structure

The course structure provides the participant the opportunity to learn transients through interactive lectures. The duration of the course is four and one-half days, presented in three-hour morning and afternoon sessions. The last day concludes at noon.

Documentation

Each participant receives a bound set of course notes, which parallel the lectures, and therefore reduces the note taking required in class. The notes also include material, which complements the lectures with additional text covering theory and practical applications.

Instructors

The principal instructor is Daniel W. Durbak, a practicing consulting engineer with many years of experience in transient analysis with EMTP and other tools, insulation coordination and surge arrester applications.

Location

The course is conducted on a regular basis at Siemens PTI offices in Schenectady, NY and at other major cities throughout the United States. It is also available for presentation at a client's location by special arrangement.

Continuing Education Units

2.7 Continuing Education Units (CEU's) will be awarded for successful completion of this short course. The CEU is the nationally recognized unit for recording participation in noncredit educational programs. One CEU is equal to ten classroom hours.

PTI – Power Academy TD

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Course Outline

Day 1

- Rated Voltage Stresses
- Overvoltages from Faults and Ferranti rise
- Backfeeding
- First Order Transients
- Second Order Transients

Day 2

- Capacitor Switching
- Circuit Breaker Transient Recovery Voltage
- Fault Current Asymmetry
- Transformer Inrush currents
- Temporary Overvoltages
- Ferroresonance
- Blackstart

Day 3

- Traveling Waves
- Switching Surges from Line Energizing
- Lightning Surges on Transmission Lines

Day 4

- Surge Arrester Behavior
- Surge Arrester Construction
- Surge Arrester Applications

Day 5

- Protective Margins and Insulation Coordination

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Siemens PTI has local offices in many countries throughout the world. For further information and contact to our worldwide business locations and local experts, please visit the Siemens PTI website and complete a contact form.

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