

# Electrical Power Transformer Training

## Description

This course offers a complete training program in power transformation, offering you and your employees a course in mastering the concepts of single-phase and three-phase power. The participant will be provided with the knowledge to properly connect, maintain, service, select and inspect a variety of electrical service transformers. The course will be an instructor-led, hands-on class, which will allow the participant to physically connect transformers, practice matching transformer bank rotation for motor rotation,

understand the placement of transformer and the cooling requirements and use the electrical measurement equipment. Books, handouts, charts and other reference material will be provided for all participants.

This course would be helpful for electricians, engineers, inspectors, safety personnel and other employees responsible for the operation and maintenance of electrical transformer systems in a commercial, industrial, institutional or utility setting.

## Outline

- Measurements
  - Voltage, Current, Resistance
  - KW, KWH, KVA, MW
- Transformation Principals
  - Voltage, Turns Ratio
  - Single Phase
  - Three Phase
  - Series and Parallel Systems
- Transformer Connections & Types
  - Primary & Secondary Wye
  - Primary & Secondary Delta
  - Delta-Wye, Delta-Delta, Delta-Zigzag
  - Liquid filled
  - Dry Type
- Design Consideration & Components
  - Temperature rise, Cooling
  - Tapchangers, Impedance
  - Tank and Steel parts
  - Cooling/Insulation Fluids
  - Grounding
- Power Systems Circuits and Design
  - Cables and Installation
  - Feeder Sizing
  - Motor Control Stations
  - Distribution and Lighting Panelboards
  - Fused and Non-fused Disconnects
  - NEC Rules

## Prerequisites

Electrical/Electronic Maintenance 1 or at least 2 years of hands on electrical experience and is proficient with the use of electrical measurement instruments.

## Course Length

40 hours/ Up to 12 participants.

## Performance Objectives

At the completion of this course the participant will be able to:

- Apply Ohm's Law.
- Explain transformation, load & voltage drop.
- Recognize delta and wye connections.
- Explain turns ratio.
- Determine the polarity of a transformer.
- Check for transformer overloading.
- Connect delta and wye transformers.
- Predict secondary voltages.
- Recognize the primary and secondary connections on a transformer.
- Understand the placement of transformers.
- Understand parallel and serial transformer service requirements.
- Describe when sequence must be considered.