



## Transformer Testing and Maintenance 36 hours

### Who Should Attend?

Field and shop technicians, field engineers, supervisors and others responsible for the testing and maintenance of power transformers rated 750kVA to 500MVA and 4.16kV to 500kV.

### Course Description:

Students will learn safe and proper maintenance and testing procedures for pad mounted, power transformers. The course covers transformers used in commercial and industrial power distribution systems, including oil and dry-type units. Load and no-load tap changer maintenance, ac and dc testing, routine inspections and oil sampling and testing are covered in detail. Students will perform routine oil tests, and perform the major tests required. A variety of electrical test equipment from various manufacturers will be used.

### Outline:

#### I. Introduction

- A) Student introductions
- B) Pre-Test

#### II. Power Transformer Construction

- A) Types of transformers
- B) Components

#### III. Transformer Connections

- A) Wye-Wye
- B) Delta-Delta
- C) Wye-Delta / Delta-Wye
- D) Others

#### IV. Sampling

- A) General safety precautions
- B) Oil
- C) Sample bottles
- D) Syringe
- E) Cautions and common mistakes
- F) Nitrogen
- G) Total-combustible gases
- H) Oxygen

#### V. Oil Testing

- A) Routine tests
- B) Color
- C) Dielectric breakdown voltage
- D) Interfacial tension
- E) Neutralization number
- F) Moisture
- G) Visual
- H) Dissolved-Gas Analysis (DGA)
- I) Interpreting test results

#### VI. Inspection and Maintenance

- A) Routine inspections
- B) Annual inspections

#### VII. Tap Changers

- A) No-load tap changers
- B) Load tap changers
- C) Inspection
- D) Maintenance
- E) Testing

### ***TDSTI***

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**Transformer Testing and Maintenance - continued**

**VIII. DC Testing**

- A) General safety
- B) Insulation resistance
- C) Winding resistance
- D) Interpreting the results

**IX. AC Testing**

- A) Power Factor
- B) Windings
- C) Bushings
- D) Oil

**X. Turns ratio (TTR)**

- A) Winding resistance
- B) Core excitation
- C) Interpreting test results

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