



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) Neutral Ground Resister
- E) 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

Technical Diagnostic Services

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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

XI. Winding Resistance

- A) Method/Operation
- B) Interpretation

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