Substation: Components, Testing, and Interpretation - Hands-On

4 Days, 2.8 CEUs

Substation maintenance is a major part of any utility or plant maintenance program. Equipment failures usually result in significant downtime because of long delays in equipment replacement. However, most of these failures can be detected and prevented.

This course is the hands-on component of the Substation: Component, Testing, and Interpretation (SCTI) virtual class; it is the last step to certification. Labs have been designed to help the technician perform the needed tests to locate weak or faulty components in the substation system, to analyze and interpret results, to perform measurements and adjustments, and to identify key lubricating components, while complying with manufacturers', NETA and IEEE standards.

The course is designed to aid skilled qualified substation maintenance technicians to perform the required maintenance and testing of equipment in industrial and utility substations.

Pre-Requisites:

Participant must have taken the Substation: Components, Testing, and Interpretation virtual class and passed the exam successfully.

Lab and Classroom Attire

AVO Training Institute is committed to the personal safety of each participant and require long pants and ANSI rated “safety-toe” work shoes for lab activities. Open-toe shoes and shorts are not considered appropriate attire for the classroom.

Learning Objectives:

To receive 2.8 CEUs, participants must attend 4 days of class (28 contact hours) and must have attained a minimum grade of 80% in the virtual SCTI final exam. Upon completion of this course the participant will demonstrate that he/she is able to:

- Perform AC and DC electrical testing in accordance with, manufacturer's recommendations, NETA 2019, and IEEE standards.
- Analyze and interpret results.
- Carry out measurements and adjustments.
- Recognize key lubricating components, and cleaning measures to avoid equipment malfunction.

SCOPE

Day 1* (7 contact hours)

I. Introduction

II. Lab 1 - Components and Contacts
  A. MV circuit breakers, switchgear and busgear:
    - Inspection, cleaning, measurements and adjustments
    - Contact resistance

Day 2 (7 contact hours)

III. Lab 2 - DC Tests
  A. Insulation integrity - Megohmeter / temperature correction, and Hipot:
    - MV circuit breakers
    - Switchgear
    - Busgear
  B. Insulation integrity - Winding resistance/temperature correction
    - Transformers

Day 3 (7 contact hours)

IV. Lab 3 - AC Tests
  A. Transformers - Single and 3 phase
    - Power factor, current excitation, and TTR
  B. Bushings - Power factor test

Day 4 (7 contact hours)

V. Lab 4 - Ancillary Tests
  A. Earth resistance
  B. Tank loss index (MV CB oil)
  C. Oil dielectric (optional)

VI. Conclusion (3 hrs)
  A. Review of lab questions

AVO Training Institute is accredited by the International Association for Continuing Education and Training (IACET) and is accredited to issue the IACET CEU

*Class scheduling times may vary based on discussions and size of class