

Circuit Breaker Testing Fundamentals

Overview:

Circuit breaker operational testing is a key aspect in maintaining circuit breakers to help ensure reliable operation. This interactive 2-day course focuses on theoretical background with practical field experience to provide technicians with vital knowledge for optimizing circuit breaker reliability.

Moving parts on circuit breakers wear, alignments and clearances change and critical functions can be negatively affected. Tests made with circuit breaker testers reveal these and other changes, in advance of a failure, which could render the equipment inoperable and cause damage to the electrical power system. An introduction of various mechanism types, interrupters and testing methodologies will be discussed. For each test, there will be an in-depth discussion of each measurement, setup and test methodology, and acceptance criteria. A specialist will provide training to decipher and review apparatus test results so that they are clear and easy to understand. Test results will be used for reporting and maintenance purposes and used for historical data samples to improve maintenance schedules.

Learning Outcomes:

Upon completion of this course, the participant will be able to:

- Understand the operation of circuit breakers, when to perform routine circuit breaker tests
- Interpret test results, case studies, and numerous field examples
- Effectively create test plans using the manufacturer's circuit breaker specifications
- Confidently use Vanguard or Doble circuit breaker analyzers and software to perform routine circuit breaker tests and manage test plans and test results;

Course Audience:

Substation test technicians working in operations, maintenance, engineering, or other service field in which knowledge of circuit breaker testing methods is a required part of their job responsibilities.

Duration:

2 Days

Class Size:

8-15

Credits:

Up to 1.6 CEUs or 16 Professional Development Hours

We will provide a training manual (soft copy) to each participant and a training certificate for each participant that successfully passes the quiz.

COURSE OUTLINE

The course program contains the following training outline:

Day 1

1. Terminology – Circuit breaker terminology such as velocity, timing, translation of graphical data, timing and stroke measurements will be discussed and explained.
2. Interruption and Theory – A circuit breaker's functional operation and all the factors that affect the efficiency and performance with respect to breaker manufacturer specifications will be covered.
3. Circuit Breaker Mechanisms – Various circuit breaker mechanisms will be introduced and their operations will be explained.
4. Circuit Breaker Timers – Electro-mechanical and Microprocessor-based timers will be introduced and their operations will be explained.

Day 2 (Hands-on)

1. Testing with Vanguard or Doble CB Analyzers – Specific training will be provided for performing circuit breaker tests with Vanguard or Doble circuit breaker analyzers.
2. Software – Users will be introduced to the Vanguard VCBA S2 or T-Doble application software and how to perform circuit breaker tests with the software. Topics will include creating test plans, translating data, and working with test records and test plans.
3. Case Studies – Field test results related to the material presented will be provided for seminar participants to discuss and analyze.

Presenter(s)

An experienced Vanguard or Doble Technical Application Engineer.

