





Generator Protection Application and Testing Virtual Class

 3 days

 English

 oCprs17en

Get a thorough introduction to generator protection in a combination of theoretical and demonstration. Get familiar with generator protection relays from different manufacturers. Learn how to efficiently test generator protection relays.

Objectives

- ▶ Become familiar with synchronous generator types used by utilities and industry
- ▶ Understand the key principals of generator protection
- ▶ Use Test Universe to effectively commission or test modern generator protective relays
- ▶ Learn to avoid common testing and maintenance pitfalls
- ▶ Become familiar with generator protection event record analysis

Content

- ▶ Generator Introduction
- ▶ Generator grounding and protection connections
- ▶ Stator ground fault protection schemes
- ▶ Stator phase fault protection schemes
- ▶ Abnormal operating conditions
- ▶ System Backup Protection
- ▶ Interpretation of generator oscillography examples

Solutions

Test Universe Software
CMC-Family

Audience

Technical staff from electric utilities or Knowledge of protection testing companies involved in commissioning or maintenance of generator relays.

Prerequisites

Generator Protection Application and Testing Virtual Class

Details

- ▶ Introduction and Basic Concepts
 - ▶ Fundamental concepts
 - ▶ Generator types
 - ▶ Basics of generator operation and control
- ▶ Protection Connections
 - ▶ Generator Grounding
 - ▶ Open delta and wye potential transformer connections
 - ▶ CT polarity conventions
 - ▶ Efficient test connections
 - ▶ Metering checks
- ▶
- ▶ Stator Phase Fault Protection
 - ▶ Generator phase differential
 - ▶ Split phase differential
- ▶ Stator Ground Fault Protection
 - ▶ Ground fault protection for direct and low impedance grounded machines
 - ▶ Ground fault protection for high impedance grounded machines
- ▶ Abnormal Operating Conditions
 - ▶ Phase over/under voltage
 - ▶ Reverse power
 - ▶ Loss of field
 - ▶ Negative sequence overcurrent protection
 - ▶ Over current protection
 - ▶ Potential fuse loss
 - ▶ Out of step
 - ▶ Over/under frequency protection
- ▶ System Backup Protection
 - ▶ Phase Distance
 - ▶ Phase overcurrent
 - ▶ Neutral overcurrent
- ▶ Laboratory Testing Demonstration
 - ▶ SEL 700G

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Agenda

Day 1:

Morning session

- 9:00 AM Welcome, Agenda Overview
- 9:15 AM Introduction and Basic Concepts
- 11:00 AM Protection Connections
- 11:30 AM Break for lunch

Afternoon session

- 1:30 PM Protection Connections (continued)
- 2:30 PM Stator Phase Fault Protection
- 4:00 PM Adjourn

Day 2:

Morning session

- 9:00 AM Stator Ground Fault Protection
- 10:00 AM Abnormal Operating Conditions
- 11:30 AM Break for lunch

Afternoon session

- 1:30 PM Abnormal Operating Conditions (continued)
- 4:00 PM Adjourn

Day 3:

Morning session

- 8:00 AM Abnormal Operating Conditions (continued)
- 11:30 AM Break for lunch

Afternoon session

- 1:00 PM System Backup Protection
- 3:30 PM Feedback and Wrap Up
- 4:00 PM Adjourn