Course description

INTCV169
Power System Protection - Advanced

Course goal

The goal of the course is to familiarize the Power system protection & familiarize various relays to peoples who are associated power plant and substation design, engineering, testing of power system protection.

Learning objectives

To impart knowledge on the various aspects of Power System Protection and products normally used in these applications.

Participant profile

Personnel from Power Utilities, Power Generation companies & industries and Consultants responsible for engineering, relay setting, testing, commissioning, operation, and maintenance of substations.

Prerequisites

Degree or diploma in engineering, basic knowledge of Protection & Substation Automation and PC operations

Topics

- Introduction to power system components and Power system protection
- System Studies related to Power System Protection
- Protection of Generators & Motors
  - Differential protection
  - Reverse power, stator ground, out-of-step, loss of field, field ground, over excitation, inter-turn
  - Over-frequency, under frequency, over voltage, under voltage
  - Under impedance, Negative phase sequence or phase unbalance
  - over current & under current protection, stator overload, rotor overload protection,
  - Synchronizing systems, synchro-check relays
  - Sample Setting Calculations
- Protection of Transformers and reactors
  - Over Current and ground fault protection
  - Application of differential protection to transformers
  - Thermal overload protection
  - Restricted Earth fault protection
  - Buchholz relay, Tank Protection Overpressure Protection
  - Winding temperature and oil temperature devices
  - Over voltage protection of transformers
  - Sample Setting Calculations
- Protection of Transmission Lines
  - Overcurrent protection
  - Breaker failure protection (BFP)
  - Auto Reclosing

  - Distance Protection
  - Carrier Aided Distance Protection
  - Time delayed Overvoltage and Under Voltage protection,
  - Power System Supervision - Broken conductor check (BRC), Loss of voltage check (LOV), Overload supervision, Dead line detection,
  - Synchrocheck and energizing check & Autorecloser (AR)
  - Sample Setting Calculations
- Protection of Capacitors
  - Short - circuit protection
  - Ground-fault protection
  - Overload protection
  - Under current protection
  - Unbalance protection
- Protection of Busbars
- Circuit Breaker Protection and monitoring
- Calculation examples of protection settings and CT parameters
- Relay coordination in Power System Protection
- Testing and Commissioning of Relaying schemes
- Recent Developments And Future Trends In Protective Relaying of Power System
- Hands on training and Demonstration
- Case studies

Course type and methods

This is an instructor led seminar Lectures, demonstrations, design, application and calculation exercises. The language of the course is English.

Course duration

The duration of the course is Five days.

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