GRID AUTOMATION TRAINING

Generator protection REG670/650
Course SEP661

Course goal
The goal of this course is to learn the structure, concepts and functions of REG670. Participants will practice device configuration and parameterization with the help of the PCM600 tool.

The course combines both theoretical lectures and practical exercises.

Learning objectives
Upon completion of this course the participants would be familiarized with:

- CT and VT set-up. Frequency tracking algorithm implementation
- Short circuit protections:
  - Low impedance differential protection
  - High impedance differential protection
  - Minimum impedance protection
  - Voltage-restrained overcurrent protection
- Stator turn-to-turn protection
- Stator and rotor earth-fault protection:
  - 95% Stator earth protection
  - 100% Stator earth fault protection (3rd harmonic based)
  - 100% Stator/rotor earth fault protection (injection principle based)
  - Rotor earth fault protection
- Abnormal operating condition:
  - Pole slip protection
  - Loss of excitation protection
  - Negative phase sequence overcurrent protection
  - Reverse/minimum forward power protection
- Voltage protection
- Overexcitation (V/Hz) protection
- Thermal overload protection
- Under/over frequency protection
- Accidental energizing protection
- Tripping, monitoring and alarming

The exercises make use of modern numerical test sets. Test will be done to verify the setting and configuration of REG670.

Participant profile
This training is targeted towards users who already know the fundamentals of protective relay theory and who have a desire to know the functions of REG670.

Prerequisites
Participants should know the fundamentals of working with control systems and electrical power networks. Furthermore, they should have participated in course SEP601 Protection and control IED manager PCM600 or have corresponding knowledge. This as previous knowledge concerning how to use the PCM600 tool is required when working with the exercises.

Also, be aware that all scheduled courses will be in English.
Topics

- PCM600 project set-up, communication PC - REG670
- Configuration of frequency tracking
- Design of graphical configuration for generator protection
- Settings and testing of low impedance generator differential protection
- Settings and testing of MHO characteristic impedance protection
- Settings and testing of stator earth-fault protection
- Settings and testing of loss of excitation
- Settings and testing of directional power protection
- Settings and testing of pole slip protection

Course type and methods

This is an instructor led course with interactive classroom discussions and associated exercises. Approximately 50% of the course is hands-on activities.

Duration

The duration of the course is 5 days.