





IEC 61850 – System Engineering Concept and Testing in Digital Substations

 2.5 days

 English

 Cpuc03en

You already know the basics of IEC 61850 and want to dive deeper into the advanced topics? In this course, you get a clearer picture of the system engineering concept based on the Substation Configuration Language (SCL) and learn more about testing in Digital Substation environments. In a combination of theoretical and practical sessions, you work in a fully digital substation environment with IEDs from different vendors and redundant network architecture for station and process bus with PTP time synchronization. Understand how to efficiently test all aspects of IEC 61850 substations, from single IEDs to the entire substation communication, from testing protection functions to the substation

Objectives

- ▶ Know the benefits of configuring the substation communication with the help of the SCL
- ▶ Learn about different engineering approaches and see what constitutes a good SCD file
- ▶ Test Substation Automation Systems (SAS) efficiently with the help of the substation SCD file
- ▶ Set up test plans for testing IEC 61850 based protection IEDs with GOOSE and Sampled Values
- ▶ Learn about and perform testing of the main aspects of the substation communication network

Content

- ▶ System communication configuration and engineering based on the SCL
- ▶ Top-Down and Bottom-Up engineering approach
- ▶ Scope, content and structure of SCL files
- ▶ Testing and troubleshooting of Substation Automation Systems (SAS) based on SCL files
- ▶ Protection testing step-by-step with GOOSE and Sampled Values
- ▶ IEC 61850 test features: simulation indication (LPHD.Sim) and test mode
- ▶ Testing digital substation networks
- ▶ Network redundancy based on PRP and HSR
- ▶ Time synchronization with PTP
- ▶ Network bandwidth and propagation delay
- ▶ Traffic management using VLANs
- ▶ Hands-on testing of IEC 61850 IEDs and systems in the environment of a fully digital substation

Solutions

IEDScout, StationScout, MBX2, CMC test sets, Test Universe, RelaySimTest, DANEO 400, ISIO 200, VBX1

Audience

Technical staff from electric utilities or companies involved in project planning, commissioning or maintenance of IEC 61850 systems

Prerequisites

Training course “IEC 61850 – Basics and Applications” (Cpuc02en) or comparable previous knowledge about IEC 61850