



INTRODUCTION TO IEC 61850 PROTOCOL

TRNG-6185

WHAT WILL I LEARN FROM THIS COURSE?

IEC 61850 is the new emerging standard that is now being applied to many new substation designs to allow for interoperability between manufacturers of substation devices. This course will introduce the major sections of the IEC 61850 standard including substation design, communication methods and monitoring and control applications. Students will also configure communication networks as described by the IEC 61850 standard and test the performance of the different methods of Peer-to-Peer messaging that are defined in the protocol.

PREREQUISITES

- An understanding of Power Systems and Protection applications

COURSE DURATION

3 Days

WHO SHOULD ATTEND?

Protection and Electrical Engineers responsible for substation design, relay configuration, system communications or substation control applications will benefit from this course. System Integrators responsible for configuring SCADA or HMI Monitoring and Control systems using the IEC 61850 protocol will also benefit from this course.

TUITION

\$ 2,400 US*

CEU CREDITS OFFERED

2.1 Credits

AGENDA

Day 1

- Protocol fundamentals
 - 7-layer communication model
 - Concept of layer 8 as Data
 - Network topologies
 - UCA concept
 - IEC61850 Profile
- Ethernet fundamentals
 - Physical interfaces
 - Data Modulation
 - Logical Layer
 - Priority
 - VLAN
- TCP/IP fundamentals
 - Network basics
 - IP Addressing
 - Networking
 - TCP functions
 - Port concepts
- Substation Security
 - IEC 61850 Application Services
 - Abstract Services
 - Data Models
 - Common Data Classes
 - Building of Data Models
 - Applied Data Models

Day 2

- MMS Overview - Manufacturing Message Specification
- Mapping Abstracting Concepts to MMS
- ASN.1 fundamentals
- Peer-to-Peer communications
 - GSSE and GOOSE Messaging
 - Concepts
 - Configuration
 - Performance
 - Application
- IEC 61850 - UCA compatibility
- Interfacing legacy devices
- OPC/DDE overview
- Time Synchronization
 - GPS
 - IRIG-B
 - SNTP
- IEC 61850 applications
 - HMI interfaces
 - Database interfaces
 - Blocking schemes
 - Wide Area Protection schemes

Day 3

- Lab Session
 - Setup and configuration of communication network
 - Communication with network of devices
 - Creation of object-based HMI screens
 - Interface OPC Clients
 - Peer-to-peer performance testing