



IEC 61850 Specification, Design, Implementation, Testing

Intent

Choosing IEC 61850 as your engineering process is vital to achieve significant time and cost savings in current projects and in future refurbishments.

Substation Automation System engineering is increasingly using IEC 61850 as the core process. Whilst it is common place and supported by many vendors, it is essential to have a comprehensive understanding of the Standard itself, how it is intended to be used, and just as importantly, how it is not intended to be used.

There is no better time than now to debunk all the myths and misrepresentations and vendor-specifics often bandied around this Standard and move your organisation and career in the right direction.

Attendees of this course will gain the key knowledge to assess which vendor nuances/features are needed and/or appropriate to their applications according to the principles of the Standard. The course is specifically vendor-agnostic, leaving the vendors to provide their own hands-on "product-based courses" to explain the nuances of their software and features.

Presenter: Rodney Hughes

Rod is a well known protection engineer and manager with over thirty years experience in the Australian, New Zealand and international power industry. He has a wide range of expertise in the strategic direction of substations, power system protection and communication design at both technical and commercial levels.

Rod is widely recognised as an industry leader in the move from electromechanical to electronic to digital to numeric devices.

Rod has worked in vendor, utility and consultant organisations, and now his own consultancy.

He has provided 1, 2, 3, 4, 5 and even 10-day protection training courses since 1985.

He is now also recognised as an industry guru and the leading provider of highly valued IEC 61850 training courses in Australia and New Zealand since 2008.

Rodney has played a leading role in CIGRE Study Committee B5, as an active member since 1985, AU Panel Convener (8 years), convener of an international Working Group, Special Reporter and frequent contributor for colloquia and discussion sessions, and instigator for the popular SEAPAC conference. He received the international CIGRE Technical Committee Award in 2011.

Who should attend?

This course is designed for asset managers, engineering managers, engineers, technicians and project managers involved in substation secondary system design operation and maintenance. The seminar will be highly valuable for people involved with Protection & Control, Telecommunications, SCADA, Information Technology and Primary Plant.

Seminar outcomes.

This seminar will present IEC 61850 from the fundamentals through to detailed aspects of the engineering process and content as well as the mechanisms and processes to obtain the benefits of the business drivers and objectives for adoption.

Attendees will also receive a comprehensive reference manual of course material and references for further learning on the subject and the areas for continued skill development.

© Rod Hughes Consulting Pty Ltd 2012

A.C.N. 137 442 089

rgh@rodhughesconsulting.com

www.rodhughesconsulting.com

PO Box 757, Blackwood, SA 5051, Australia

Office +61 8 7127 6357

Mobile +61 419 845 253



3-Day Course Content

The course program a series of structured learning modules to build attendees understanding of the objectives and principles of the Standard through to practical implementation solutions.

The program itself has evolved based on many previous courses and now includes coverage of Edition 2 components of the Standard.

Overview

- * Objectives
- * Benefits

IEC 61850 Fundamentals

- * SCADA vs. SAS (more than DNP3)
- * Structure & Semantics
 - ◇ Logical Nodes, Data Objects, Data Attributes
 - ◇ Say "No" to GGIO
 - ◇ Common Data Classes
 - ◇ Logical Devices
- * Communication Mechanisms ('protocols')
 - ◇ MMS ACSI
 - ◇ GOOSE
 - ◇ Sample Values
 - ◇ Datasets
 - ◇ Commands
 - ◇ Reports
 - ◇ Time Synchronisation
- * IED Compliance vs. Interoperability
- * Beyond just substation protection & control

SCL Engineering

- * Creating and using SSD/SCD/CID/IID/ICD/SED
- * Vendor-centric bottom up
- * System-centric top-down
- * System Specification
- * IED Specification
- * Meaning and Use of Conformance Certificates
- * PICS, MICS, PIXIT
- * Re-usable Engineering

Function implementation and modelling

- * Protection
 - ◇ O/C, Rev Block, Diff, CBF, PTRC
- * SCADA & Control
- * Automation
 - ◇ Volt Reg, A/R, Synchrocheck, UFLS
- * Condition Monitoring
- * Substation Metering & Recording
- * Smart Grid domain applications
 - ◇ Wind farm
 - ◇ Hydro
 - ◇ Distributed Energy Resources
 - ◇ Electric Vehicles
 - ◇ Photo-voltaic
 - ◇ Revenue Metering and Billing

The Ethernet Substation

- * Layer 2 vs Layer 3 (MAC vs IP address)
- * VLAN/Multicast Filtering
- * Priority Tag
- * Ingress/Egress Rules
- * Architectural Considerations
 - ◇ Duplication vs. Redundancy
 - ◇ National Electricity Rules
 - ◇ Star/RSTP/HSR/PRP
- * Security vs. Operation
- * Time Synchronisation
- * Testing IEC 61850 systems

Organisational Development Activity

- * Intellectual Property
 - ◇ policy, specification, standardisation
- * Intellectual Capability
 - ◇ tools, processes, documentation
- * Intellectual Capacity
 - * training and roll out
- * SAS rollout and scope evolution
 - ◇ technology impact plans
 - ◇ Merging Units and NCIT