

'Hands On' IEC 61850 Systems Integration Level 3 Course

Electricity is an essential and crucial part of modern life with the industry and consumers demanding increased sustainability, reliability, timeliness and cost efficiency in the way in which electricity is generated and delivered to the consumer.



IEC 61850 is a fundamental improvement in the design, engineering and commissioning processes of a substation. This leads to reduced design costs, faster engineering, improved schemes, accurate documentation and automated testing, throughout life cycle of substation augmentations, system refurbishments and equipment replacements. Network topology, security and indeed the functions that are required must all be considered as to what is required, how they will be physically provided and allocated as well as how the system will be documented, tested and maintained.



Rod Hughes Consulting provides a range of courses for all levels from executive to technical staff from general overview, to detailed introduction to hands on practitioner training.

Course outcomes.

The course provides the basis of skills for undertaking substation automation system design and integration, covering IEC 61850 from the fundamentals through to detailed aspects of the engineering process and content.

- Use of **SCL** Systems Configuration Language
- Use of systems specification and integration tools
- Create **SSD** System Specification Description files
 - Linking plant
 - Function binding
- Create **SCD** System Configuration Description
 - Develop Use Cases
 - Datasets & Control Blocks
 - Select **ACSI** Abstract Communication Service Interface
 - Configure Sampled Value message
 - Configure GOOSE messages and reports
 - Integrate **ICD** IED Capability Description files
 - Create a working process and station bus application

Through **individual hands on** work with software tools on individual PCs and real equipment to build an operating system, the attendees will develop skills to link aspects of substation design including Primary Plant, Protection & Control, Telecommunications, SCADA and Information Technology. Throughout the course attendees will develop an SAS application from a single line diagram through to configuring real hardware to provide Sampled Values from a test set to operate a protection relay to trip a circuit breaker using IEC 61850.

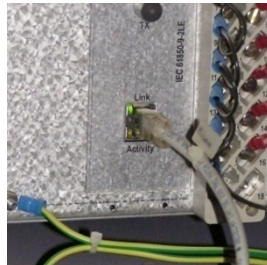
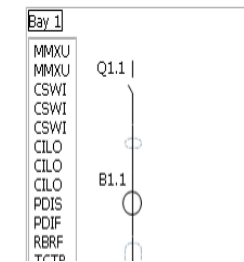
Rodney Hughes

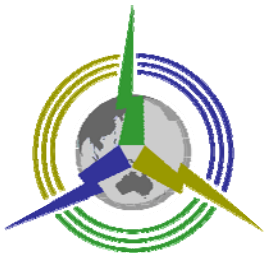
Rod is Managing Director of Rod Hughes Consulting Pty Ltd and has thirty years experience in the Australian and international power industry.

He is a protection engineer who is well known for his experience in providing leading industry training courses over many years.

His perspective from supplier, utility and consultancy organizations has given Rod a wide range of expertise in the strategic direction of substations, power system protection and telecommunication design at both technical and commercial levels.

Rod is the Convener of the CIGRE AP B5 Panel on Protection & Automation and a co-author of CIGRE Technical Brochure 326 – "The Introduction of IEC61850 and Its Impact on Protection & Automation Within Substations" and Convener of Working B5.39 "Documentation for Digital Substation Automation Systems Lifecycle".





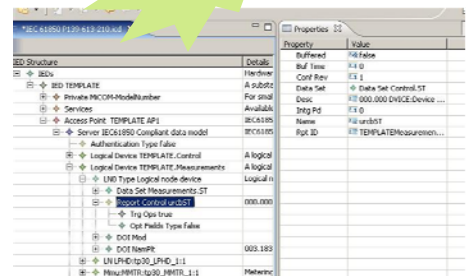
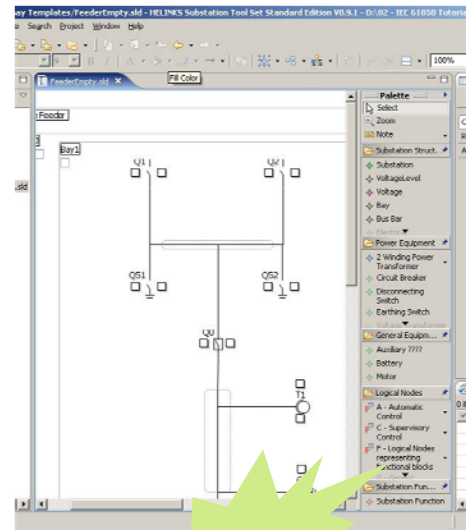
it4power



Rod Hughes Consulting Pty Ltd is pleased to work in co-operation with Christoph Brunner of it4power LLC to provide this training program. Christoph is an independent consultant in IEC 61850 and Smart Grid technologies and is also Chairman of the IEC Technical Committee 57 Working Group 10 responsible for the Standard.

The course program is designed to build skills throughout the four days in the context of creating a sample substation application. The course modules cover various topics and aspects such as:

1. Introduction and refresh on IEC 61850
 - Scope and purpose of IEC 61850
 - Exploring real devices
 - Edition 2 of IEC 61850
2. Application modelling for substation automation
 - Common data classes
 - Communication between substations
 - The extension rules
 - IEC 62271—HV equipment
 - IEC 61850-9-2 Process bus
3. Communication principles in substations
 - Information exchange models - IEC 61850-7-1
 - Abstract communication services interface IEC 61850-7-2
 - Extracting information from IEDs
 - Monitoring and SCADA
 - Alarm handling
 - Mapping of abstract services
 - Communication technologies
 - ACSI services and models (SV, GOOSE, Reports, Client/Server)
 - Communication testing and configuration
4. Engineering process - principles and specification
 - Engineering process with IEC 61850-6 System configuration language (SCL)
 - System specification
 - XML basics
 - System specification using SCL
5. System design
 - System migration
 - System management - revision control
 - Communication architecture and topology
 - Device modelling and function allocation
 - Availability considerations
 - IED engineering tools - IEC 61850 specifics
 - Use of the substation gateway
 - Use of IEC 61850 to the control center
 - IED instantiation and mapping to primary equipment, engineering of communication flow
6. System verification
 - Testing requirements
 - System testing
 - Acceptance testing: Aspects of FAT and SAT
 - Testing support



Who should attend?

This is a comprehensive course to develop hands on practitioner skills for the engineering process of IEC 61850. This course is a key element of the skill development for engineers and technicians involved in the aspects of protection, SCADA, primary plant interfaces and communication systems from specification to procurement, integration testing, operation and project management of the power system.

The training module is intended for the specialists involved with the integration of IEC 61850 based IEDs in multi-vendor environments. It is highly recommended that attendees first attend Rod Hughes Consulting's Level Two skills seminar although a refresher session is included

This course addresses the engineering process of IEC 61850 Part 6 for System Integration. This includes the specification of an IEC 61850 system and the manner in which projects should be executed. The explanations of the theoretical aspects of IEC 61850 are enhanced through hands on workshops with real systems tools and real equipment.

This training does not include any training relative to any specific IEDs and their tool although selected equipment is used to configure and test a real hardware system. Specific IED engineering is only handled to the level of being able to understand the principle concepts of integrating IEDs in an IEC 61850 based system in the true spirit of vendor independent engineering capability of IEC 61850.

Cost: On request
Dates: Register your interest online for details of the next course
Time: 8.30am—5.00pm
Venue: TBA

Lunch provided

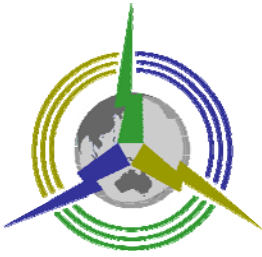
Places are strictly limited so book early

Important Information

1. Registrations will only be confirmed on receipt of full payment prior to the event, unless by prior arrangement, e.g. Purchase Order. Payment by Cheque or EFT only - sorry, no credit cards.
2. Registration form and Tax Invoice on request—contact as below.
3. Completed registration forms should be completed as a Word document and returned with the email subject line containing “**Course Registration—Location—YourCompanyName**” for efficient processing.
4. Rod Hughes Consulting Pty Ltd reserves the right to accept or refuse registrations at its sole discretion and without explanation.
5. The course cost does not include travel, accommodation or other expenses as may be incurred by attendees, which will be the responsibility of attendees in all respects.
6. Attendance cancellation up to seven working days prior to the event will be subject to a 10% cancellation fee.
7. Cancellations less than seven working days prior to the event will not be refunded and must be paid in full. Substitute attendees can attend.
8. Course materials are only provided to the attendees on the day in hard copy only. Course content is subject to copyright.
9. The course is subject to a minimum number of attendees. Cancellation of the course for any reason by Rod Hughes Consulting Pty Ltd will be fully refunded.
10. The course is aimed at current engineering practice for systems integration and hence the program may vary slightly to the advertised content in order to present up to date processes.
11. Please request any special dietary requirements at least three days prior to the event.

Registrations and further details contact:

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Rod Hughes Consulting—your training partner—have already provided IEC 61850 training to over 200 engineers in more than 10 events in Australia and New Zealand

Competency Development Programs

Organisations world wide are fast realising that IEC 61850 is not simply about buying a different box, but rather the engineering process and engineering skills of the organisation that will enable IEC 61850 to be deployed. Rod Hughes Consulting has therefore developed a process and skill development program to enable organisations to build their IEC 61850 capabilities. These capabilities will position the organisations as competent IEC 61850 organisations and hence continue to work in their chosen field of the power industry and increase their added value and range of services.

The typical programs are outlined below. Tailored programs available on request.

Systems Practitioner Training Programs

28 CPD Points

This range of courses is aimed at developing practitioner skill levels depending on the particular discipline area and skill set required. Attendees will learn the aspects of engineering IEC 61850 based systems through hands on training using real software tools and hardware. It is recommended that attendees will have previously attended the Level 2 training described below.

Level 3a 4-day Systems Specification & Integration

Level 3b 4-day Systems Test

Level 3c 4-day IED Developer

Level 3d 2-day SAS & IED Specification

Topics are selected to provide specific skills for the area of competence

- Develop SSD, SCD, CID files
- Use of SCL tools
- Integrate devices, establish system operation, GOOSE, Sampled Values
- SAS testing
- Network performance analysis

Programs can be tailored to suit particular needs if required.

Register your interest online for the next courses
In house courses on request

Applying IEC 61850 Engineering

8 CPD Points

1-day seminar. This course introduces the spectrum of concepts and engineering processes of IEC 61850. This is an ideal course for general attendance by all technical staff as organisations start to consider and develop IEC 61850 strategies.

- Business drivers
- Understanding the Standard
- Engineering Process
- Systems Engineering
- Networking Issues
- National Electricity Rules
- Organisational Road Map
- Project examples

Continuing the popular series
Adelaide, Auckland, Brisbane,
Melbourne, Sydney, Perth,
Wellington

IEC 61850 Concepts

2 CPD Points

This briefing presentation, typically 1.5—2 hours duration, is suited to organisations seeking to have a high level introduction to IEC 61850 concepts, the fundamental engineering process and the business drivers to adopt this technology.

Contact Rodney Hughes for further information.

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