

IEC 61850 Comprehensive & Independent Hands-on Training

The Future of Power Systems Requires Comprehensive Know-how

IEC 61850 is the global standard for Power System Automation (generation, transport, distribution ... high, medium and low voltage levels). It allows for an open and "future proof" design, different architectures and possibilities to combine products from multiple vendors. In order for users and system integrators to utilize the benefits of IEC 61850 it is necessary for power utilities, integrators and vendors to education their most crucial asset – people, and start the migration to IEC 61850.



Training is performed in small groups mixing theory and practice

The popular STRI and NettedAutomation hands-on training provides both theory and practice on the application of IEC 61850 in a substation. During the training we follow the planning, design and engineering process for real applications all the way to configuration and testing on a real multivendor test installation. We believe real understanding is the result of both knowledge and hands-on experience. Therefore the training offers a unique combination of presentations, demonstrations and practical workshop.

NettedAutomation (Germany) provide training, consultancy and product support services for the application of distributed automation systems and open communications.

STRI (Sweden) is an accredited high voltage laboratory and independent technical consulting company. We offer IEC 61850 consulting services and independent multivendor interoperability testing. STRI's IEC 61850 lab comprises IEDs and tools from ABB, Areva, Siemens and SEL together with test sets from Omicron, Doble and Megger, as well as an IEC 61131-3 programmable PLC from Beckhoff.

Training Content

The three day training consists of the following modules:

- ❖ **Module 1** gives a basic introduction to the IEC 61850 standard for substation applications, power plant applications (hydro, wind, decentralized energy resources) together with a summary with real applications and the demonstration of IEC 61850 software.
- ❖ **Module 2** gives an independent and more detailed presentation of the IEC 61850 standard for substation and device modeling as well as communication principles (GOOSE, Sample Values, Client/Server applications). This module tells you what you need to know for specification, evaluation, verification and maintenance of IEC 61850 systems (whole substations and IEDs), with real examples and demonstration of IEC 61850 specification using IEC 61850-6 (SCL) – THE system configuration language for electric power systems.
The latest developments in the preparation of the second edition of IEC 61850, new extensions for hydro power plants, wind turbines and distributed energy resources as well as the use of IEC 61850 in the U.S. DoE efforts for transforming the electric power system into a Smart(er) Grid (NIST Interoperability roadmap) will be presented and discussed. The needs to reach sustainable interoperability of IEDs will be presented.
The use of IEC 61499 (Distributed Function Blocks) in cooperation with IEC 61850 for autonomous functions in distribution networks will be presented and discussed.
- ❖ **Module 3: IED interoperability workshop**
IEC 61850 hands-on workshop demonstrating interoperability of protection and control devices from ABB, Areva, GE, SEL, and Siemens, as well as an IEC 61131-3 programmable PLC from Beckhoff. In subgroups the participants browse the IED model of each device (using self-description, validation of model and SCL file) and create outgoing GOOSE messages. After lunch the network traffic is jointly analyzed and the reception of GOOSE messages will be configured in subgroups and tested using IEC 61850 compatible test devices. Configuration is also demonstrated using vendor independent tools. Experience in system debugging and network traffic analysis using third party and open source tools is gained.



Training Program

Day 1 – Monday 30st of November (Wednesday 02nd December) 2009

10 ⁰⁰ –10 ¹⁵	Welcome and course introduction	Karlheinz Schwarz, NettedAutomation
10 ¹⁵ –17 ³⁰	IEC 61850 Module 1	Karlheinz Schwarz, NettedAutomation
17 ³⁰ –18 ⁰⁰	Questions, answers and discussions	All

Day 2 – Tuesday 01st December (Thursday 03rd December) 2009

08 ⁰⁰ –11 ³⁰	IEC 61850 Module 2	Karlheinz Schwarz, NettedAutomation
11 ³⁰ –12 ³⁰	Questions, answers and discussions	All
13 ³⁰ –18 ⁰⁰	IEC 61850 interoperability hands-on workshop, Module 3	Andrea Bonetti, STRI

Day 3 – Wednesday 02nd December (Friday 04th December) 2009

08 ⁰⁰ –17 ⁰⁰	IEC 61850 interoperability hands-on workshop, Module 3	Andrea Bonetti, STRI
17 ⁰⁰ –18 ⁰⁰	Final questions, answers and discussions	All

The number of attendees for the event in **Brisbane** is limited to 15 attendees.
If more than 15 attendees register for the event in **Sydney** we will split the hands-on training into two groups.



Participants of previous trainings in Ludvika (Sweden), Frankfurt (Germany), Turin (Italy)

Price and Registration

Price for modules 1-3: 1.750 EURO (plus Australian tax if applicable)

A formal registration form is **attached**. Formal registration is required latest November 1st, 2009. We reserve the right to cancel the training course if the number of registered participants is less than 10 at that date. For additional dates and in-house hands-on training courses please contact us (contact see below).

Curriculum vitae of Lecturers

Karlheinz Schwarz received his diploma (masters degree) in Information Technology at the University of Segen (Germany) 1982. He has held a management position within Siemens and has an immense experience in the migration from proprietary or other solutions to standard compliant solutions. He is involved in many standardization activities within IEC, CENELEC, IEEE and DIN since 1985. He received in 2007 the IEC 1906 Award "for his strong involvement in the edition of the IEC 61850 series, its promotion inside and outside IEC, and specifically its adaptation for wind turbine plant control". He has since many years as an independent consultant provided training courses and consulting services for IEC 61850 all over the world. (http://nettedautomation.com/download/Netted-Schwarz-Profile-en_2009-01-21.pdf).

Andrea Bonetti from STRI, graduated as electrical engineer at Università La Sapienza in Rome, Italy in 1993. Between 1998 and 2007 Andrea worked as relay engineer for after sales customer support and training at ABB Substation Automation Products in Västerås, Sweden. During 2008 Andrea worked for Megger developing there IEC 61850 compatible test set and tools. He has participated in several IEC 61850 projects with protection/control applications.

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Please read more on www.stri.se/iec61850 and www.nettedautomation.com/seminars.



Registration Form

IEC 61850 Comprehensive & Independent Hands-on Training with Multivendor IEDs

Brisbane/Australia, 30 November - 02 December 2009

Sydney/Australia, 02-04 December 2009

The registration fee for the event is 1.750 EURO (plus Australian tax if applicable). The fee includes documentation, food and beverages.

Personal data

Name		Company
E-mail		Department
Telephone	Fax	Address for invoicing
Occupation (E.g. planning engineer)		Signature

I will participate in the three (3) day Hands-on Training Course scheduled for

- Brisbane/Australia, 30 November - 02 December 2009
- Sydney/Australia, 02-04 December 2009

Meeting location and accommodation

The event in Brisbane is at ENERGEX, Brisbane downtown. A list of hotels will be provided in due time. The meeting place for Sydney will be selected in due time – we will try to select again a convenient hotel close to the Sydney International Airport.

Please indicate which payment method you would prefer: **credit card, bank account transfer, or cash.**

Please return the filled out and signed form by e-mail or fax, no later than **November 01, 2009** to seminars@nettedautomation.com or Fax +49 721 679387

For further information please visit: <http://www.nettedautomation.com/seminars/> or www.stri.se

NettedAutomation GmbH will send you a confirmation and invoice after we have your registration received. You may also send us your company's purchase order.

For more information please contact:

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Privacy Policy

STRI and Nettedautomation GmbH take precautions (including administrative, technical, and physical measures) to safe-guard your personal information against loss, theft, and misuse, as well as unauthorized access, disclosure, alteration, and destruction.

Cancellation Policy

Cancellations received up to 10 business days prior to the start of the event will be fully refunded. Cancellations within 9 business days to the start of the workshop are subject to the entire event fee. If you don't cancel and don't attend, you are still responsible for payment. Substitutions can be made at any time.