

## Announcement

### Leading Firms Join their Efforts to Provide Comprehensive Hands-on Training for Substation Automation using IEC 61850

Karlsruhe (Germany) / Ludvika (Sweden), 01 August 2008, NettedAutomation GmbH and STRI today announced a strategic education and service alliance to serve all experts of the power delivery system in the application of IEC 61850 compliant tools, devices (IEDs) and systems worldwide. The two organizations provide vendor-independent and up-to-date experience and information offering hands-on training on the most crucial parts of IEC 61850 and using real tools and real devices.

The big vendors like ABB, AREVA, GE, and Siemens are speeding up quite fast. In order for users to utilize the benefits of IEC 61850 it is necessary for the generation, transmission and distribution companies to start now with the awareness and education program for their most crucial asset – people, and start the migration to IEC 61850.

The joined effort will focus on all aspects of the application of the new standard series IEC 61850 in substation automation and power generation systems. The new effort provides a comprehensive, cost effective suite of services helping utilities plan, develop, implement and manage a successful path to electric transmission and distribution applying advanced IEC 61850 compliant engineering and configuration tools and devices.

The comprehensive hands-on training course (for all experts dealing with procurement specifications, design, engineering, configuration, installation, commissioning, testing, operation, maintenance, diagnosis, service et cetera) offers the theory and philosophy of IEC 61850 and comprehensive hands-on training for multivendor IEDs and Substation Configuration Language (SCL). The first neutral hands-on training is scheduled for Ludvika (Sweden) on 25-28 November 2008. Other training sessions for 2009 are planned. Inhouse training courses are on request. The current setup of the test lab in Ludvika is shown on page 2. Further details can be found here:

<http://nettedautomation.com/seminars/uca/> and [www.stri.se/iec61850](http://www.stri.se/iec61850)

#### About NettedAutomation

NettedAutomation's lecturer Karlheinz Schwarz (Schwarz Consultant Company) has a unique and recognized know-how of IEC 61850 and has immense experience in the migration from proprietary or other solutions to standard compliant solutions. He is involved in standardization activities within ICE, CENELEC, IEEE, and DIN. In 2007 he received 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".

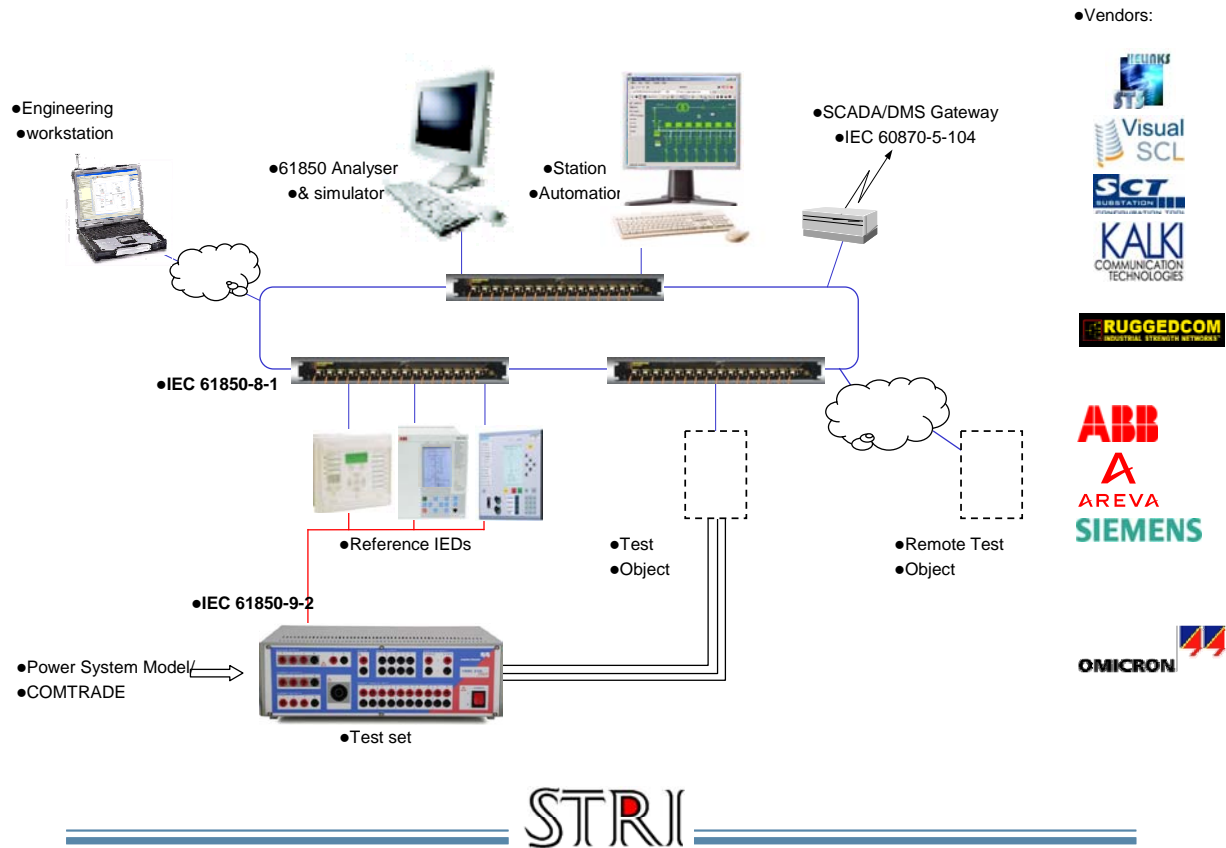
[http://nettedautomation.com/download/SCC-Profile-en\\_2008-01-16.pdf](http://nettedautomation.com/download/SCC-Profile-en_2008-01-16.pdf)

#### About STRI

STRI is an accredited high voltage laboratory and independent technical consulting company with its competence extended with multivendor interoperability testing facilities for IEC 61850 and consulting services for the implementation for IEC 61850. The lab comprises IEDs and tools from ABB, Areva and Siemens and test instruments from Omicron and Doble. Lecturers Gunnar Stranne and Carl Ohlen have more than 30 years experience within the field of protection, control and substation automation both in Europe and the Americas. Nicholas Etherden has several years experience in the development and configuration of IEC 61850 IEDs and Anders Fahlström has several years experience of IT & Ethernet communication.

Current setup of typical devices at the STRI laboratory to be used for the first hands-on training course in November 2008:

## STRI INDEPENDENT INTEROPERABILITY LABORATORY FOR IEC 61850



A complete substation can be modeled using state-of-the art IEDs from ABB, Areva and Siemens, switches from RuggedCom and test sets from Omicron and Doble. Additional IEDs, switches, gate ways and test sets from other manufacturers can be added. Vendor specific as well as third party software is used for IEC 61850 engineering and configuration. The interoperability verification will consequently cover both IEDs, switches, software and test sets.

Contact:

Carl Öhlén  
 Manager Marketing & Management Consulting  
 STRI AB  
 Box 707  
 SE-771 80 LUDVIKA, Sweden  
 Direct phone +46 (0)240 795 02  
 Mobile +46 (0)70-6179562  
 Fax +46 (0)240 807 66  
[carl.ohlen@stri.se](mailto:carl.ohlen@stri.se)

Karlheinz Schwarz  
 NettedAutomation GmbH  
 Im Eichbaeumle 108  
 76139 Karlsruhe  
 Germany  
 Phone +49-721-684844  
 Fax +49-721-679387  
[karlheinz.schwarz@nettedautomation.com](mailto:karlheinz.schwarz@nettedautomation.com)

## **IEC 61850 Comprehensive & Independent Hands-on Training**

**The future of power systems requires comprehensive know-how**

IEC 61850 is the global standard for Substation Automation. It allows for an open and "future proof" design, different architectures and possibilities to combine products from multiple vendors. This new standard has many new possibilities but also challenges. By using the inherent advantages of IEC 61850 it is possible to optimize more reliable and cost effective solutions.

The big vendors are speeding up quite fast. In order for users and system integrators to utilize the benefits of IEC 61850 it is necessary for the generation, transmission and distribution companies to start now with the awareness and education program for their most crucial asset – people, and start the migration to IEC 61850.

### **Objective and structure of the training**

This training has the objective to provide both theory and practice on the application of IEC 61850 in a substation by following the planning, design and engineering process for real applications all the way to configuration and testing based on a real multivendor test installation. The 4 day course consists of:

- ❖ **Module 1** gives a level 1 introduction to the IEC 61850 standard together with a summary with real applications and the demonstration of STRI facilities for multivendor interoperability testing.
- ❖ **Module 2** gives an independent and more detailed update on the IEC 61850 standard for substation and device modeling as well as communication principles with real examples.
- ❖ **Module 3** will present possible functional allocation and architecture of a typical substation with state of the art IEDs from different manufacturers (ABB, Areva, Siemens) as well as available test sets (Omicron, Doble, Programma) with group sessions on how to optimize the solution.
- ❖ **Module 4** is divided in two parallel courses. Option 1 – IEC 61850 hands-on workshop demonstrating interoperability of protection and control devices from ABB, Areva and Siemens. Option 2 – Substation Configuration Language (SCL) hands-on workshop. Learn what you need to know for specification, evaluation, verification, and maintenance of IEC 61850 substations and IEDs.

### **Your IEC 61850 hands on training competence resources**

This training is a joint initiative by NettedAutomation GmbH (Germany) and STRI (Sweden).

NettedAutomation's lecturer Karlheinz Schwarz has a unique and recognized know-how of IEC 61850 and has immense experience in the migration from proprietary or other solutions to standard compliant solutions. He is involved in standardization activities within IEC, ISO, CENELEC, IEEE and DIN. In 2007 he received 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"*.

STRI is an accredited high voltage laboratory and independent technical consulting company with its competence extended with multivendor interoperability testing facilities for IEC 61850 and consulting services for IEC 61850. The lab comprises IEDs and tools from ABB, Areva and Siemens together with test sets from Omicron and Doble. Lecturers Gunnar Stranne and Carl Ohlen have more than 30 years experience within the field of protection, control and substation automation both in Europe and the Americas. Nicholas Etherden has several years experience in the development and configuration of IEC 61850 IEDs and Anders Fahlström has several years experience of IT & Ethernet communication.

**IEC 61850:  
Second Independent Hands-on Training  
with Multivendor IEDs:  
3-6 March 2009 Frankfurt, Germany  
Training Program**

**Location: Frankfurt, Germany**

**Day 1 – Tuesday 3rd of March 2009**

10 <sup>00</sup> -10 <sup>10</sup>	Welcome and course introduction	Karlheinz Schwarz, SCC
10 <sup>10</sup> -16 <sup>00</sup>	IEC 61850 Level 1	Karlheinz Schwarz, SCC
16 <sup>00</sup> -17 <sup>00</sup>	Application and IEC 61850 demonstration	Carl Öhlen, Nicholas Etherden, STRI
19 <sup>00</sup>	Welcome drink for all participants	

\* The demonstration and welcome event is open for participant arriving for day 2.

**Day 2 – Wednesday 4th of March 2009**

09 <sup>00</sup> -17 <sup>00</sup>	IEC 61850 Level 2	Karlheinz Schwarz, SCC
18 <sup>00</sup>	Course dinner	

**Day 3 – Thursday 5th of March 2009**

08 <sup>00</sup> -15 <sup>00</sup>	Application of IEC 61850 in protection and control (Theory and group sessions)	Gunnar Stranne, Carl Öhlen, STRI *
15 <sup>00</sup> -16 <sup>00</sup>	Questions, answers and discussions	All

\* Karlheinz Schwarz, SCC and engineers from STRI IEC 61850 Independent Interoperability Laboratory, will be available during day 3 for answering questions and providing more details on the standard series and the use in IEDs, tools and substations.

**Hands-on Sessions**

**Day 3 – Thursday 5th of March 2009**

16 <sup>00</sup> -17 <sup>30</sup>	Introduction for participants of workshop	Nicholas Etherden/Karlheinz Schwarz
------------------------------------	---	-------------------------------------

**Day 4 – Friday 6 of March 2009**

8 <sup>00</sup> -15 <sup>00</sup>	IEC 61850 interoperability workshop	Nicholas Etherden, Andrea Bonetti, Programma
8 <sup>00</sup> -15 <sup>00</sup>	Substation Configuration Language workshop	Karlheinz Schwarz
15 <sup>00</sup> -16 <sup>00</sup>	Comparison of results from workshops and Q&A	All

## Training Content

### Module 1/Day 1

Introduction to IEC 61850, the basics of the standard series, updates and other extensions. Presentation of the STRI multivendor application with ABB, Areva and Siemens IEDs for a typical substation. Demonstration of compliant IEC 61850 software, devices and test procedures in STRI's Independent IEC 61850 laboratory.

People arriving for day 2 are welcome to take part in demonstrations and evening activities.

### Module 2/Day 2

IEC 61850 substation and device modeling and communication principles (GOOSE, Sample Values, Client/Server applications). What you need to know for specification, evaluation, verification and maintenance of IEC 61850 systems (whole substations and IEDs).

### Module 3/Day 3

Review of available functions and possible architectures for substation automation. Optimized application of IEC 61850 in power utilities with examples based on the STRI multivendor application with ABB, Areva and Siemens IEDs for a typical substation. Morning session with theory and afternoon with group workshop to design and specify typical substation functions.

### Module 4/Day 3 evening + Day 4

Module 4A: IED interoperability workshop (limited to 12 people)

The intention is to create a small system demonstrating interoperability of protection and control devices from ABB, Areva and Siemens. The participants will be divided in three subgroups with the task of browsing the IED model of each device (using self-description, validation of model and SCL file) and creating outgoing GOOSE messages from their relay. After lunch the network traffic is jointly analyzed and the reception of GOOSE messages will be configured in smaller groups. Finally the system is tested through e.g. simple multi-protection tripping schemes and the use of IEC 61850 compatible test devices.

Participant gets hands-on experience of at least two vendors IEC 61850 implementation in IEDs and tools. Experience in system debugging and network traffic analysis using third party and open source tools is gained.

Module 4B: Substation Configuration Language (SCL) workshop (limited to 12 people)

The workshop focuses on the design of typical substation functions and the engineering of the substation and IEDs according to the engineering process described in edition 2 of IEC 61850-6 (SCL). The participants will use third-party functional specification, design and engineering tools to design ICD files, substation sections, communication sections, IED sections and DataTypeTemplates. The participants will create a SCD file that is used to generate a fully functional IED (IEC 61850) server simulator. The SCD file is also used as import file for an IED configuration tool to configure a real IED (data model, server and GOOSE message). During the last hour of the workshop the two groups join for the IED configuration by use of the SCD file created by the SCL group.

This workshop 4B requires participants to bring their own notebooks (at least one for two attendees). The demo tools (from third parties) required will be provided by NettedAutomation prior to the beginning of day 4.

### Registration Options and Prices

Module 1 is intended for engineers and decision makers working with substation automation, IT strategies and/or asset management within power utilities for generation, transmission and distribution to get an introduction to and update of the present status on IEC 61850 and its applications.

Module 2 and 3 is intended for engineers working with the planning, specification, design, operation and maintenance of substation automation to get a deeper understanding for migration to and application of IEC 61850. Module 4 is intended for engineers specializing in the application, engineering, configuration and testing of IEDs for protection and control in an IEC 61850 based system.

Module 1	IEC 61850 Level 1 (when booked alone)	600 EUR
Module 1	IEC 61850 Level 1 (when booked with other modules)	400 EUR
Modules 2-3	IEC 61850 Level 2 and applications	1.100 EUR
Modules 2-4a	IEC 61850 Level 2, applications + interop. workshop (max 12)	1.950 EUR
Modules 2-4b	IEC 61850 Level 2, applications + SCL workshop (max 12)	1.750 EUR

Please read more on [www.stri.se/iec61850](http://www.stri.se/iec61850) and [www.nettedautomation.com/seminars](http://www.nettedautomation.com/seminars). Since the number of participants is limited please email a non-binding "Interest to participate" with an indication for which module you want to participate in to [stri@stri.se](mailto:stri@stri.se) before September 30, 2008. You will then receive a formal registration form. Formal registration depending on availability is required latest November 1<sup>st</sup>. We reserve the right to cancel the training course if the number of registered participants is less than 15 at that date. For additional dates and in-house hands-on training courses please contact Mr. Carl Öhlén or Mr. Karlheinz Schwarz (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/SCC-Profile-en\\_2008-01-16.pdf](http://nettedautomation.com/download/SCC-Profile-en_2008-01-16.pdf)).

**Carl Öhlen** from STRI has a MSc in Electrical Engineering at The Royal Institute of Technology in Stockholm, 1973. He has more than 30 years of experience in protection, control and substation automation working for Vattenfall, Programma and ABB in Sweden, Switzerland, Brazil and USA. He is author of several CIGRE & IEEE papers as well as books within this field and has held a management position within ABB during the introduction of IEC 61850 IED product family.

**Gunnar Stranne** has more than 40 years experience in application of protection, control and substation automation working for ABB and GEC-Alstom (Now Areva) with base in Sweden (20 years) and USA (20 years). He has been lecturer in many seminars and is author of IEEE papers including training of IEC 61850 IED products and tools.

**Nicholas Etherden** from STRI has a Master of Science in Engineering Physics from Uppsala University, 2001. He has several years experience from the development of a new IED family for IEC 61850 as application engineer, project manager and product marketing manager at ABB. This includes tools, application development and application support.

**Andrea Bonetti** from Programma Electric AB, graduated as electrical engineer at Università La Sapienza in Rome, Italy in 1993. Between 1998 and 2008 Andrea worked as relay engineer for after sales customer support and training at ABB Substation Automation Products in Västerås, Sweden, and has participated in several IEC 61850 projects with protection/control applications.

Karlheinz Schwarz, NettedAutomation GmbH  
Im Eichbaeumle 108  
76139 Karlsruhe  
Germany  
Phone +49-721-684844  
Fax +49-721-679387  
[karlheinz.schwarz@nettedautomation.com](mailto:karlheinz.schwarz@nettedautomation.com)

Carl Öhlén, STRI AB  
Box 707  
SE-771 80 LUDVIKA, Sweden  
Direct phone +46 (0)240 795 02  
Mobile +46 (0)70-6179562  
Fax +46 (0)240 807 66  
[carl.ohlen@stri.se](mailto:carl.ohlen@stri.se)

## Registration Form

IEC 61850 Comprehensive & Independent Hands-on Training with Multivendor IEDs  
03 – 06 March 2009 in Frankfurt, Germany

### Personal data

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

### I will participate in the following modules (Please mark with X)

Module 1 Introduction to IEC 61850 <input type="checkbox"/>	Module 2-3 Update on IEC 61850 and demos of real IEDs ... <input type="checkbox"/>
Module 2-4 IED interoperability workshop (includes module 2-3) <input type="checkbox"/>	Module 2-4 SCL workshop (includes module 2-3) <input type="checkbox"/>
Prices: Module 1 (when booked alone) = 600 EUR Module 1 (when booked together with other modules) = 400 EUR Module 2-4 Interoperability workshop = 1 950 EUR	Module 2-3 = 1 100 EUR Module 2-4 SCL workshop = 1 750 EUR

### Meeting location and accommodation

The course will be held at a hotel close to the Frankfurt Rhein-Main International Airport with convenient transportation by hotel shuttle bus or public transportation.  
Details will be provided in due time.

Please return this form by e-mail or fax, no later than **February 14, 2009** to [seminars@nettedautomation.com](mailto:seminars@nettedautomation.com) or fax +49 721 679387.

For the program please see: <http://www.nettedautomation.com/seminars/> or [www.stri.se](http://www.stri.se)

We will send you a confirmation and invoice as soon as we have your registration received.

For more information please contact:

**Karlheinz Schwarz**, NettedAutomation GmbH  
Im Eichbaeumle 108, D-76139 Karlsruhe, Germany  
Phone +49-721-684844  
Fax +49-721-679387  
[karlheinz.schwarz@nettedautomation.com](mailto:karlheinz.schwarz@nettedautomation.com)

**Carl Öhlén**, STRI AB  
Box 707, SE-771 80 LUDVIKA, Sweden  
Direct phone +46 (0)240 795 02  
Mobile +46 (0)70-6179562  
Fax +46 (0)240 807 66  
[carl.ohlen@stri.se](mailto:carl.ohlen@stri.se)

#### Privacy Policy

STRI takes 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.