IEC 61850, IEC 61400-25, IEC 61970 CIM, …
Comprehensive Seminar &Training
IEC Standards for Power Systems –
Automation, Protection, Monitoring, Engineering (SCL), SCADA, SmartGrids, RTU, …

You'll get up-to-date, first-hand & neutral knowledge, experience, Do's and Don't's and guidance from the editors … the fastest start in application and implementation

… the most successful vendor-independent education to help you like we did in India and Australia recently and all over:

Implementations and applications based on IEC Standards like IEC 61850 (Communication networks and systems for power utility automation), IEC 61400-25 (Wind turbines), IEC 61970 (CIM), … **grow faster than expected** in many application domains like power generation, high voltage transmission, medium voltage power distribution, … all over! To handle the exploding demands for products based on these IEC standards we offer courses for the best possible, up-to-date, first-hand & neutral knowledge, experience, and **most efficient start in the development and use** of IEC standard conformant products for substations, wind power plants, condition monitoring, decentralized energy resources, SmartGrids, SCADA, Engineering (SCL) substation to control center links, RTUs etc. We advice in all crucial **Do's and Don't's to reach interoperability**!

IEC 61850 is the backbone for substation automation and many other application domains, e. g., wind power plants, DER (decentralized energy resources), hydro power plants, power quality monitoring, condition monitoring of any power system equipment etc. Thousands of IEC 61850 compliant substations with several ten thousand IEDs have already been sold and will be in operation by end of 2010. Many products have already been field proven. Utilities and other industries like oil and gas companies all over trust the new technology "IEC 61850 inside" for substations and many other applications. IEC has published further standards for in the utility and non-utility application domain.

Many vendors and users all over have been challenged by the new IEC standard interfaces for intelligent devices and tools. Vendors, users and system integrators need more information to reach interoperable systems and devices. **The system integration has become THE crucial issue!** Many utilities have learnt this lesson: The benefit of the new standard depends on a comprehensive knowledge about IEC 61850. You may seek for efficient help for the application, implementation and system integration. We help to "understand" the many products and vendors! Here is what we offer today:

3 day comprehensive public seminar and hands-on training with Measurement IED and many demo software (fully functional) on Automation, Protection, Monitoring, Engineering, Configuration (SCL), SCADA, SmartGrids, RTU, …

We provide all the necessary training to reach interoperable IEDs and Tools. 2,000 experts from several hundred companies from more than 50 countries have attended our 100 excellent training courses all over. The training courses are hold by Dipl.-Ing. Karlheinz Schwarz – an experts that really knows about the needs for the application and implementation of the standards: IEC 61850, IEC 61400-25, IEC 61970 (CIM), ISO 9506 (MMS), ISO 8824/25 (ASN.1), Web services, …

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Editor of IEC 61850 and IEC 61400-25 (Communications for wind power plants)
Member of IEC TC 57 WG 10, WG 17 (DER), and WG 18 (Hydro power plants),
Member of IEC TC 88 PT 25 (IEC 61400-25)
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For updates and other topics visit: www.nettedautomation.com/seminars/uca

2010-02-01

3 day comprehensive public seminar and hands-on training with Measurement IED and many demo software (most are fully functional) on Automation, Protection, Monitoring, Engineering, Configuration (SCL), SCADA, SmartGrids, RTU, ...

NettedAutomation GmbH
Information & Communication Systems

The following crucial modules will be presented and discussed among other topics:

Modules		Topics	Title / description
Preparation		Get prepared in some crucial topics in order to run more efficiently during the event	In preparation for the training we send selected material to all registered people some three weeks prior to the event. What is a model, a protocol, MMS, an interface, ASN.1, XML, ... Ethernet?
0. General	S-0000	Welcome and opening	Welcome, opening, roll call of attendees, expectations of attendees, Title and scope of IEC 61850 (IEC TC 57), Power Delivery System, What does IEC 61850 provide?, Motivation for the new standards, IEC 61850 in brief, Re-use of IEC 61850, Tools and System Integration, Standardization and projects, General observations.
1. Management and automation of the power system (basics)	S-0100	Power system automation basics	Basics of power system information integration and automation covering control centers, substations, power generation; Elements of the power system: Substations, Power Generation, Transmission, Distribution, System architecture, Functions, Communications, System engineering, and device configuration
	S-0101	Standardization	IEC activities related to power system standardization, IEC TC 57 and TC 88, International organizations for the power industry, IEC organization and standardization work, IEC activities related to the power industry, CIGRE, IEEE, UCA Users Group, IEC 61400 User Group, activities related to the power industry; international fieldbus
2. IEC 61850 (and IEC 61400-25) basics	S-0200	IEC 61850 series – overview	Communication networks and systems for power system automation: general introduction on whole series. Design objectives and scope IEC 61850, Content and structure of IEC 61850, Features of IEC 61850, Application modeling, Information exchange and communication services, the 16 parts of the standard
	S-0201	IEC 61850 Application modeling principles	Modeling protection, substation automation, other applications (Logical nodes, data and data attributes, function modeling, extension of the models, monitoring). The elements of the data model, Acquisition of measured information, Controlling of switchgear equipment, Protection functions, Edition 2 updates, Example of a model.
	S-0202	IEC 61850-6 engineering process	Engineering process using the configuration language: from IEDs and single line diagram to configured substation automation system Systems specification (Single line diagram and functions), IED specification (IED capability description), System engineering, IED engineering and configuration, Use of SCL (summary), Edition 2.
	S-0203	Communication	Information exchange with the ACSI according to IEC 61850-7-2 Basics, Information flow through IEDs, ACSI in detail (IEC 61850-7-2), Server, Logical Device, Logical Node, Data, DataSet, Control Blocks (Reporting, Logging, GOOSE, SV), Control, Conformance statement, Recording (IEC 61850-7-4).
	S-0204	Implementation of IEC 61850 conformant devices and tools	Device models, design of advanced IEDs, software and hardware architectures, OEM software
	S-0205	Device conformance testing	Conformance testing of devices according to IEC 61850-10
	S-0206	Extension rules IEC 61850	The extension rules for Logical Nodes, Data, and Common Data Classes, the name space concept. Scope, Instantiation of existing information model classes, New information models, Name space concept.
	S-0207	Substation configuration language (SCL)	System configuration language: basics and details; Engineering process and SCL, SCL object model, SCL syntax (IEC 61850-6 (SCL)), SCL edition 2. The object model and content of the SCL files, Examples, Binding models to real world, inputs, and to outputs, the data flow engineering
3. Substation automation and protection	S-0301	Applying IEC 61850 for power system automation – use cases	Use cases from power system automation like measuring of current and voltage, protection, operating a switch, creation of a sequence of events, SCADA. Use case 1 – measuring current and voltage Use case 2 – operate switchgear
	S-0302	Product specifications for substation equipment	Implementation guideline IEC 61850-9-2 "LE", Product standard for switchgear with integrated IEC 61850 interface (IEC 62271-003)
4. Power generation	S-040x	Introduction	Wind power plants, Hydro power plants, Distributed Energy Resources
...	...	...	...
7. Communication and SCADA aspects and protocol implementations	S-0700	Extracting data from field devices	General SCADA services – configuration of control blocks (IEC 61850-7-2). Overview, Reporting, Logging, GOOSE, Sampled values
	S-0701	Monitoring for SCADA applications	Fundamentals of special SCADA services (IEC 61850-7-2): model basics for monitoring, event reporting, event logging.

Modules		Topics	Title / description
			IEC 61850 aspects of monitoring, SCADA services, Alarm handling
	S-0702	Communication technologies	Fundamentals of Industrial Ethernet used for substations and beyond Industrial Ethernet features, Ethernet Requirements for IEC 61850, Shared Ethernet, Switched Ethernet, Ethernet frames, Ethertypes used in IEC 61850, Priority tagging, 802.1Q / 802.1p
	0709	Network Engineering Guidelines (IEC 61850-11)	Recovery protocols (RSTP, PRP, etc); different approaches to network topology, redundancy, time synchronization, etc.; status of standardization
8. Products and projects	S-0800	Practical experience	IEC 61850 devices, tools, and projects in reality; penetration of IEC 61850 (61400-25) in the global market. Equipment, IEDs, Tools, Substations, Industrial applications
	S-0807	IEC 61850 Network Analyzer and SCL	Presentation and demonstration of the use of SCL files for the interpretation of messages: Connect IED Scout to QNE Measurement IED, Generate SCL for QNE with IED Scout, KEMA UNICA trace without SCL, KEMA UNICA trace with SCL, Ethereal Trace and interpretation of ASN.1 BER
9. Real-time information exchange with GOOSE and Sampled Values	S-0901	GOOSE (Generic Object Oriented System Event)	GOOSE Control Blocks and dynamic behavior of GOOSE message exchange. Required Ethernet communication infrastructure (Ethertype, Multicasting, Multicast filtering, …) . GOSSE message syntax. Configuration of GOOSE control using SCL. GOOSE application examples. Demonstration of GOOSE messaging and network traffic analysis.
H. General IEC 61850 hands-on training	H-03	IED communication	Hands-on training of the use of communication services (ACSI) using an IED Simulator and common IED Browsers. The communication comprises all ACSI services except Sampled Values; communication with real IEDs (Measurement IED); Network infrastructure will be provided; two attendees each with a PC will be connected 1:1 by a cross-over cable; training software will be provided in advance.
	H-04	Analyzing the communication	Analyzing the communication according to IEC 61850: client-server, GOOSE, SV (if available); communication testing
Q & A		Question & Answers	All attendees are requested to provide questions some two weeks prior to the event. Questions will be answered and discussed during the course.

These topics may be updated. The final program for the events listed on the next page will be provided in due time.

► Sample program: Program for 3 day special Seminar/Training in Reykjavik (Iceland), January 2010 ◄

30 experts from Iceland attended the event – Iceland's population is just some 300.000

Who should attend?

- Substation automation and protection experts and decision makers
- System and device designer and implementers
- Automation, IT and communication experts from utilities, power system planners
- System integrators, engineering personal, SCADA experts
- Control center experts
- Experts from operators, aggregators, power plants (hydro, wind, DER, ...), virtual power plants
- Asset manager, maintenance and service personal, Field application engineers
- Consultants and technical advisors
- …

… best price - best advice

Dates and registration form See back page

Fee 2.450 EURO
(A discount of 20 per cent will be granted if more than one person per organization attends; for any other discount please contact us seminars@nettedautomation.com)

Attendees will receive all slides as paper copy and a CD ROM with all slides and other material like demo software etc.

Many other topics for advanced courses and in-house training can be found under:

http://www.nettedautomation.com/seminars

A current list of modules for seminars and hands-on training can be downloaded:

http://www.nettedautomation.com/download/Sem/prog/Training-Modules-2010-02-01.pdf [pdf, 150 KB]

registration form ►

Registration Form

(fill in form interactively or print it out first)

I would like to register for the following event on **IEC 61850 and related standards** (as listed above):

3 day General Seminar/Hands-on Training with Measurement and Control IEDs and several Demo Software (Client/Server and GOOSE)

☐ **05-07 May 2010** **Frankfurt (Germany)**

☐ **22-24 September 2010** **Frankfurt (Germany)**

Fee for Seminar/Training: € 2.450.-

(A discount of 20 per cent will be granted if more than one person per organization attends; for any other discount please contact us seminars@nettedautomation.com)

All prices are in EURO (**excluding** costs for transportation and accommodation for attendees and **excluding** Value Added Tax (if applicable)). Course fee includes lunch and breaks. Participants will be notified of the exact training location in due time.

Registration Information:

First & Family Name - (Dr) (Mr) (Mrs) (Ms) _____

Company _____

Department _____

Address _____

City, Zip Code, Country _____

Email Address _____

Telephone _____ Fax _____

1. Charge my Credit Card:

☐ VISA

☐ MasterCard

Card Number: _____

Expiration date: _____

Name of card holder: _____

OR

2. Regular bank account transfer

☐ We would like to pay by regular bank account transfer

Privacy Policy:

NettedAutomation takes precautions (including administrative, technical, and physical measures) to safeguard 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.

Signature:

Date: 2010-

Please fax/email the signed form OR your company's purchase order to:

Fax: +49-721-67-93-87

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