Program

IEC 61850 Seminar and Hands-on Training

Frankfurt (Germany)
05.–07. May 2010
(22.-24. September 2010)

Notes:

1. Questions and discussions during and after each presentation are expected and welcome.
2. Breaks may be shifted and added if required.
3. If required some presentations may be reduced or extended.
4. The given durations may vary.
5. Page numbers Pxxx refer to the printed slides for the attendees

Wednesday, 05. May 2010 (Day 1)

#	Modul	Topic	Description	Min	Time
01	S-0000 P007	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.	150	10:00 – 12:30
Lunch					12:30 – 13:30
02	S-0100 P037	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	45	13:30 – 14:15
03	S-0101 P049	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,	30	14:15 – 14:45

#	Modul	Topic	Description	Min	Time
			activities related to the power industry; international fieldbus		
Break					14:45 – 15:05
04	S-0200 P060	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	100	15:05 – 16:45
Break					16:45 – 16:55
05	S-0202 P088	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.	45	16:55 – 17:40
06		Q&A		20	17:40 – 18:00

Thursday, 06. May 2010 (Day 2)

#	Modul	Topic	Description	Min	Time
07	S-0201 P094	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.	60	08:30 – 09:30
08	S-0203 P110	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).	90	09:30 – 10:30
Break					10:30 – 10:50
		cont.			10:50 – 11:20
09	S-0204 P149	Implementation of IEC 61850 conformant devices and tools	Device models, design of advanced IEDs, software and hardware architectures, OEM software	40	11:20 – 12:00
10	S-0800 P178	Practical experience	IEC 61850 devices, tools, and projects in reality; penetration of IEC 61850 (61400-	30	12:00 – 12:30

#	Modul	Topic	Description	Min	Time
			25) in the global market. Equipment, IEDs, Tools, Substations, Industrial applications		
Lunch					12:30 – 13:30
11	S-0205 P192	Device conformance testing	Conformance testing of devices according to IEC 61850-10	20	13:30 – 13:50
12	S-0206 P200	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 mod-els, Name space concept.	25	13:50 – 14:15
13	S-0207 P210	Substation configuration language (SCL)	System configuration language: basics and details; Engineering process and SCL, SCL object model, SCL syntax (IEC 61850-6 (SCL))	60	14:15 – 14:45
Break					14:45 – 15:05
		cont.			15:05 – 15:35
14	S-0301 P235	Applying IEC 61850 for substation automation – use cases	Use cases from substation automation like measuring of current and voltage, protection, operating a switch, creation of a sequence of events	25	15:35 – 16:00
15	S-0302 P244	Product specifications for substation equipment	Implementation guideline IEC 61850-9-2 "LE", Product standard for switchgear with integrated IEC 61850 interface (IEC 62271-003)	20	16:00 – 16:20
Break					16:20 – 16:30
16	S-0400 P252	Wind power plants	Overview and introduction of the standard for Communications for monitoring and control of wind power plants – IEC 61400-25	10	16:30 – 16:40
17	S-0401 P267	Hydro power plants	Overview and introduction of the standard for Communications for monitoring and control of hydro power plants – IEC 61850-7-410	10	16:40 – 16:50
18	S-0402 P277	Distributed Energy Resources	Overview and introduction of the standard for Communications for monitoring and control of Distributed Energy Resources (DER) – IEC 61850-7-420	10	16:50 – 17:00
19	S-0700 P286	Extracting data from field devices	General SCADA services – configuration of control blocks (IEC 61850-7-2). Overview, Reporting, Logging, GOOSE, Sampled values	40	17:00 – 17:40
20	S-0701 P301	Monitoring for SCADA applications	Fundamentals of special SCADA services (IEC 61850-7-2): model basics for monitoring, event reporting, event logging. IEC 61850 aspects of monitoring, SCADA services, Alarm handling	20	17:40 – 18:00

Friday, 07. May 2010 (Day 3)

21	S-0807 P310	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	30	08:30 – 09:00
22	S-0900 P322	Network Infrastructure for Real-time information exchange	Required Ethernet communication infrastructure (Ethertype, Multicasting, Multicast filtering, … Redundancy). Non Ethernet communication solutions.	45	09:00 – 09:45
23	S-0901 P344	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.	45	09:45 – 10:30
Break					10:30 – 10:50
24	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.	180	10:50 – 12:30
Lunch					12:30 – 13:30
		cont.			13.30 – 14:50
Break					14:50 – 15:10
25	H-04	Analyzing the communication	Analyzing the communication according to IEC 61850: client-server, GOOSE, SV (if available); communication testing	60	15:10 – 16:10
26		Question & Answers	Final questions and answers	20	16:10 – 16:30