

# FMTTP POWER, NETTEDAUTOMATION, IP LEET PROTECTION AND CONTROL WITH IEC 61850, SUBSTATION IT & CYBER SECURITY

## 3,4 OR 5 DAYS SEMINAR WITH PRACTICAL DEMONSTRATIONS

With focus on protection and control in HV/MV substations  
using GOOSE, SV, SCADA and SCL Language, as well all IT & Cyber Security aspects

**KTH - ROYAL INSTITUTE OF TECHNOLOGY - STOCKHOLM, SWEDEN**  
**12-16 MARCH 2018**

**MR. ANDREA BONETTI, PR. LARS NORDSTRÖM, MR. HÅVARD STORÅS, MR. KARLHEINZ SCHWARZ**



**M.Sc. Andrea Bonetti**  
Member of IEC TC95:  
Measuring relays and  
protection equipment  
IEC 1906 Award - 2013



**Pr. Lars Nordström**  
Director and Professor  
KTH – Royal Institute of  
Technology Stockholm



**Mr. Håvard Storås**  
IT & Cyber Security  
Expert, 25 years working  
with networks within the  
Power Industry



**Dipl.- Ing. Karlheinz Schwarz**  
Editor of IEC 61850;  
Member of IEC TC57: Power systems  
management and information exchange  
Member of IEC TC88: Wind turbines  
(IEC 61400-25) IEC 1906 Award - 2007

The IEC 61850 applied for several years to many new substation designs all over the world. During the seminar, truly experienced and vendor independent experts will help you to see and understand how use the core parts of the IEC 61850 standard are applied in substation design, monitoring, protection and control applications as well as the IT and the Cyber Security aspect.

**All the presentations are supported by practical examples or demonstrations.**

4100+ Experts  
from 850+ Companies  
From 85+ Countries  
Since 2004

The detailed program can be requested... at [info@fmtppower.com](mailto:info@fmtppower.com)



# FMTP POWER, NETTEDAUTOMATION, IP LEET

## Seminar contents:

— **Introduction on the IEC 61850 Standard** (Edition 1, 2, and 2.1) and experience after 10 years in operation. Where are we today?

— **Smart Grid and IEC 61850.**

Status of Smart Grid in Nordic Countries  
Role of IEC 61850 in Smart Grid systems  
Role of the Communication Structure in Smart Grid systems



— **Substation Automation and IEC 61850.**

Application of IEC 61850 standard in Substation Automation: SCL Language, protection dependability and security, real time performance and requirements, specification and engineering processes, commissioning and maintenance testing.

— **Communication Networks & Cyber security.**

Architecture and Redundancy topologies, Cyber secure networks: Traffic segregation; Recommendations Firewalls.



Communication inside the Substations: IP address strategies, components & devices

Communication outside the Substations: Protocols, Separation of networks, MPLS strategies, ...

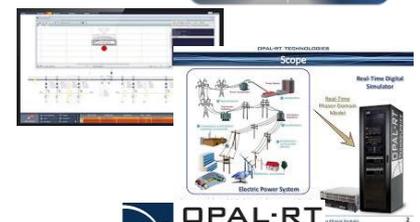
— **Return of experience, applications and practical demonstrations:**

- Protection and Control in Substation Automation
- Engineering and Configuration
- Commissioning and Maintenance
- Monitoring and SCADA system
- Specification of the IEC 61850 protection and control system.



**Through the practical demonstrations the participants will learn:**

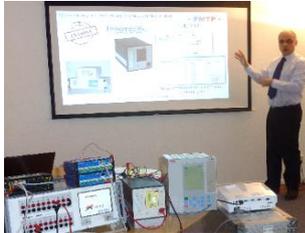
- To handle **IEC 61850 relay protections from different vendors** and their software tools; to be able to efficiently manage flexibility in engineering and interoperability.
- To use the **state of the art IEC 61850 testing tools and equipment** to efficiently detect the technical problems and work-out their solutions.
- To **understand SCL files, setup clients and servers for MMS communication** to SCADA and RTU Systems
- To use vendors and third-party **IEC 61850 Engineering tools** to Specify, Configure and Document Substation Automation Systems
- Communication **Networks & Cyber Security**: Exercises based on VLAN segregation, RSTP Loop setup, Switch security.
- Group Practical Exercises with PC and Hardware and Software tools
- IEC 61850 Real time system simulation and IEC 60255



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## FMTP POWER, NETTEDAUTOMATION, IP LEET

### Practical demonstrations on relay protection:



- Example of configuration and testing of protection IEDs for IEC 61850 GOOSE application.
- Example of engineering/configuration and testing of interoperability between IEDs from different manufacturers
- Examples on how to identify IEC 61850 interoperability problems and how to solve them. How to choose and use the right tool for the right situation

### Practical demonstration on SCADA configuration:

- Examples of Implementation, configuration and use case on SCADA System (Client) / IED Protection and Monitoring IED (Servers).  
A demo software for client/server and publisher/subscriber (running on Windows) will be provided for every attendee.

### Practical demonstration on Communication Networks & Cyber Security:

- Exercises based on VLAN segregation, RSTP Loop setup, Switch security.



### **Who should attend?**

- Protection and Electrical Engineers (protection, control, engineering, SCADA, asset managers)
- System integrators
- Product managers of vendors
- R&D engineers
- Maintenance personnel
- Experts responsible for network infrastructure

### **The Experts teaching**

#### **FMTP Power AB – Mr. Andrea Bonetti**

Our expert Andrea Bonetti, was born in Bergamo, Italy, 1966. He graduated in electrical engineering (MSEE) at Università La Sapienza of Rome, Italy in 1993. Andrea worked for 10 years as high voltage protection engineer for ABB Substation Automation Products in Västerås, Sweden. Since the first years of the IEC 61850 standard, Andrea gave local and remote support in several projects with IEC 61850 implementations for protection control applications with ABB 670 IEDs, where testing and interoperability issues were encountered. Andrea was part of the International ABB teaching team to spread the knowledge of IEC 61850 worldwide.



## FMTP POWER, NETTEDAUTOMATION, IP LEET

Andrea also worked at Programma/Megger as product manager for relay test equipment. He worked on the development of IEC 61850 compatible relay test set and software tools, resulting into patented solutions.

After having worked at STRI AB as technical manager for the Substation Automation Unit, Andrea works now at FMTP AB as technical manager.

Andrea is member of the IEC TC 95 – MT4 technical committee (“Measuring relays and protection equipment”) since 2006.

During year 2013 Andrea has received the IEC 1906 Award.

### FMTP Power AB

Associated specialists from the Power Industry with knowledge and experience in Protective relays, Smart Grid, IEC 61850, Circuit breakers, battery testing, ...All of them have more than 20 years' experience in Power Industry from the G5 group (ABB, ALSTOM, GE, SCHNEIDER, SIEMENS). They are involved in many standardization activities within IEC since 2002. They are have consulting activities and are organizing worldwide, customer specific Seminars and training courses. [www.fmtppower.com](http://www.fmtppower.com)

Watch the movie presentation: <http://www.screencast.com/t/81zcdGvfm>



### NettedAutomation GmbH – Mr. Karlheinz Schwarz

Our expert, Dipl.-Ing. Karlheinz Schwarz (president of Schwarz Consulting Company, SCC, and owner of NettedAutomation GmbH; Karlsruhe/Germany) specializing in distributed automation systems. He received his Diplom-Ingenieur from University Siegen (Germany) in 1982. He is involved in many international standardization projects (IEC 61850 – utility automation, DER, hydro power, IEC 61400-25 – wind power, IEC 61158 – Fieldbus, ISO 9506 – MMS ...) since 1984. He is engaged in representing main industry branches in the international standardization of real-time information modelling, configuration, and exchange systems. Core services are consulting and training of utility personal, system integrators, consultants, and vendors. He has educated more than 3.600 experts from more than 800 companies and more than 80 countries. The training courses are considered to be outstanding. Mr. Schwarz is a well-known authority on the application of mainstream information and communication technologies in the utility industry and general automation domain.



<http://www.blog.iec61850.com>

Personal experience, capabilities, of Karlheinz Schwarz ... introduction on IEC 61850, training modules, feedback from attendees, list of companies, countries, and pictures can be found here:

<http://nettedautomation.com/download/Sem/fra14/General-Training.pdf>



Watch the movie presentation: <http://www.screencast.com/t/wzw53AgPq>

### IPLeet AS – Mr. Håvard Storås

Håvard Storås was born in Oslo, Norway, 1972. He has always had a passion about information technology, and was one of the first in Scandinavia who passed the CCIE certification (Cisco Certified Internetwork Expert). At that time, he was 26 years old and was working for Datamatrix AS. Håvard has since then worked with several projects for companies as Telenor, Ministry of Finance, Tele2 and Bantele. The last five years he has worked for Eidsiva Energi AS, one of the largest power producers in Norway. Here he has designed and implemented IP communication both inside and outside substations and hydropower plants. He also implemented, as one of the first in Norway, a PRP (IEC 62439-3:2016) network in a substation. Håvard is the founder of **IPLeet AS**, and work as a senior network architect. Despite an experience of 25 years, he still have the same passion. Håvard wants to share all of his experience and competence, and thus contribute to integrating IT and OT. Hopefully his lessons will learn you a lot. More info: [www.ipleet.no](http://www.ipleet.no)



### KTH (Royal Institute of Technology) – Pr. Lars Nordström

Lars Nordström is Professor in Information Systems for Power System Control at KTH – The Royal Institute of Technology, Stockholm, Sweden. Between the years of 1998 and 2004 Lars Nordström upheld various management positions in the ICT industry including start-up of a software firm in location based services. From 2006 to 2012 Lars Nordström was the Director of EKC2 - Swedish center of Excellence in electric power engineering, and from 2011 until 2013 thematic leader for Smart grids & Electric Storage at the European Institute of Technology's KIC InnoEnergy.

His research interests include future architectures, functionality and quality aspects of Information and communication systems used for power system control, operation, automation and protection. He is the author of 100+ scientific papers in journals and international conferences within the area of cyber physical aspects of power system control, a senior member of the IEEE, CIRED and Cigré, as well as serving on IEC's Strategic group on Smart grids and EU DG Energy taskforce on Smart grids.



## FMTTP POWER, NETTEDAUTOMATION, IP LEET

**PLACE OF SEMINAR:**

KTH - Royal Institute of Technology  
Osquidas väg 10, 100 44 Stockholm - Sweden

**DATES:**

- **12-16 March 2018**
- Possibilities to attend 3, 4 or 5 days

**Proposed Hotel:**

Elite Hotel Arcadia Stockholm Körsbärsvägen 1, Stockholm

Tel: 08-566 215 00 [www.elite.se/en/](http://www.elite.se/en/)

Crystal Plaza Hotel Birger Jarlsgatan 35, Stockholm

Tel. +46 (0)8-406 88 00 [www.crystalplazahotel.se/en/](http://www.crystalplazahotel.se/en/)

**Registrations**

Seminar fee: **2050 €** per attendee for the entire seminar (5 days) - plus taxes if applicable.

3 days 1570€ or 4 days 1850€

15% discount if 2 or more attendees from the same company.

It covers access to seminar and trainings, papers & proceeding and includes lunch and coffee breaks.

For any contact, registrations, payment or travel & living help, please contact:

**FMTTP Power AB**

[info@fmttppower.com](mailto:info@fmttppower.com)

Tel +46 70 575 0214

Fax +46 18 495 1068

Sweden

**Nettedautomation GmbH**

[schwarz@scc-online.de](mailto:schwarz@scc-online.de)

Tel +49 721 684 844

Fax: +49 721 679 387

Germany

**Additional services offered by FMTTP Power and NettedAutomation**

We offer also in-house hands-on training courses with protection relays from main manufacturers, test tools, engineering and configuration tools, SCADA solutions, and Gateways between IEC 61850 and IEC 60870-5- and DNP3 and IT, Cybersecurity audits and consulting services.

Our in-house hands-on training courses are the most efficient way to speed up and to get exactly what you need:

- focuses on your needs
- from practice for practice
- link the standard with your own daily practice
- exchanging and sharing practical experience
- no competitors are listening to your plans
- vendor independent
- private and confidential questions and answers,
- no travel time and travel cost for your people
- we come out to you – all over the world

**The above described seminar could also be conducted in-house.**

Let us know your needs and we will provide you a quote.

Contact:

Andrea Bonetti: [andrea.bonetti@fmttppower.com](mailto:andrea.bonetti@fmttppower.com)

Karlheinz Schwarz : [karlheinz.schwarz@nettedautomation.com](mailto:karlheinz.schwarz@nettedautomation.com)

Hårvard Storås: [hs@ipleet.no](mailto:hs@ipleet.no)