



IEC Standards for Power Systems –
 Generation, Transmission, Distribution, ... Design, Bidding, Engineering,
 Automation, Monitoring, Information Management, Maintenance, ...



Supplier information, capabilities, and experience profile

The primary service of NettedAutomation is to provide **consulting** services to all enterprises for feasibility studies, information modeling, system specification, implementation and use of devices and systems; **education and hands-on training** for users, system integrators and vendors in all aspects of the Standards of IEC TC 58, TC 88, and MMS (ISO 9506) for Power Systems; **support** for marketing, information dissemination, procurement for distributed systems, specifying procurement requirements; and **evaluation** of bidder proposals for devices, systems, tools, and open communications. The application domains cover generation, transmission, and distribution, RTU, SCADA and EMS systems, automation and (condition) monitoring systems.

**We bring standards,
 people, devices,
 tools, and systems
 together!**



NettedAutomation has long-time experience in IEC 61850, IEC 61400-25, IEC 60870-5-10x, IEC 60870-6 TASE.2, IEC 62351, DNP3, IEC 61970 CIM, IEC 61968, IEC 61158, IEC 61499, IEEE 802.3, and ISO 9506 MMS to name just a few.



To keep abreast of the latest technical development, NettedAutomation is actively involved in workshops, seminars, hands-on training, task forces, and committees of various professional organizations such as ISO, IEC, IEEE, CEN, CENELEC, DKE, VDI, ZVEI, and UCA IUG.

1. Supplier information

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Foundation	2000
Ownership	Privately held by
Registered	Amtsgericht Karlsruhe HRB 8866
General Manager	Ingeruth Schwarz
Major Customers	<u>Users:</u> AXPO, Bayernwerk, Badenwerk, Con Edison NYC, ENERGI E2, E.ON, Endessa, EdF, EdP, Energex, ETRANS, EVS, EWE, GdF, HEW, Manitoba Hydro, Hydro Quebec, Itaipu Binacional Hydro Power Plant Brazil, KEPCO, Mercedes Benz, PowerLink Australia, RWE, Statkraft, TNB Malaysia, Terna, Transba, Transpower NZ, Vector, VEW, Vattenfall, ...



Dipl.-Ing. Karlheinz Schwarz



**Our knowledge
 and experience
 are asked all over!**

**more than 1.700 experts
 from more than 350 companies
 from more than 50 countries
 educated**

Vendors: AEG, ABB, Alstom, AREVA, Bosch, BTC, Doble, E+H, IDS, Eberle, GE, Hirschmann, Kloeckner & Möller, LG, OMICRON, Pepperl & Fuchs, Phoenix Contact, PSI, Repas AEG, Schweitzer Engineering Labs, Siemens, TNB, VATECH SAT, SMA, VESTAS Wind, Voith Hydro, ...

Consultants: KEPRI, Teshmont, ...

2. Curriculum vitae of Karlheinz Schwarz

Dipl.-Ing. **Karlheinz Schwarz** (55) received his diploma (master degree) in Information Technology at the University of Siegen (Germany) in 1982. He is married and has four children and six grandchildren.

As a manager with Siemens Automation & Drives (communication systems) he represented the positions of Siemens and the German national committee in the international standardization of MAP, MMS, MMS companion standards, Fieldbus, and other standardization projects from 1984 until 1997.

He is president of SCC (Schwarz Consulting Company), Karlsruhe (Germany) specializing in distributed automation systems. He is an independent consultant in the area of information modeling, systems and information integration, system and device engineering and configuration, open information exchange, and open communications since 1992. Mr. Schwarz has immense experience in the migration from proprietary or other solutions to standard compliant solutions.

Vendor independent, up-to-date, neutral, and experienced!

He is involved in many standardization activities within IEC (TC 57, TC 65, and TC 88), ISO (TC 184), CENELEC (TC 65 CX), IEEE (SCC 36 "UCA", 802), and DIN since 1985. He is engaged in representing main industry branches in the global standardization and providing consulting services to users and vendors. Mr. Schwarz is a well-known authority in the application of mainstream information and communication technologies. He provides guidance in the migration from proprietary solutions to advanced seamless and standard-based solutions applicable in substations, and power generation units, and between these and with local, regional, and central SCADA systems. Specifically, his contributions to the publication of many standards are considered to be outstanding.

He has been awarded with the IEC 1906 Award in 2007 *"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://www.nettedautomation.com/download/IEC1906-Award.pdf>

3. NettedAutomation's Capabilities and Experience Profile

We help you with the implementation and application of these standards!

We assist companies in examining open communications and distributed systems technologies in substation automation and many other application areas outside the utility industry (for which IEC 61850 was originally designed). We support the design and implementation of IEDs compliant with IEC 61850 and other standards. Support for procurement requirements and

evaluation of bidder proposals for IEC 61850 related devices, systems and tools can be provided. We have long term experience in implementing and organizing IEC 61850 and IEC 61850 based pilot projects.

Mr. Schwarz is the principal teacher and trainer of the seminars and training services offered and organized by NettedAutomation GmbH (<http://www.nettedautomation.com/seminars>). We has given lectures all over the world – in Australia, Africa, North and South America, Asia, and Europe.

We develop questionnaires for the pre-qualification of potential bidders. This allows that only those companies that could really meet the requirements to submit a tender will be selected; thus eliminating vendors with inappropriate solutions (pre-qualification). Once the utility management agrees to negotiate with the tenderer chosen, we assist in development of a contractually binding statement of work.

When the contract has been signed, we assist the utility during project implementation by monitoring the progress of the contractor, reviewing documentation, attending project meetings, monitoring factory testing, assisting in possible change orders, and ensuring that the contractor meets the technical and performance requirements in the contract. We offers consulting services outlined above for a wide range of information and device modeling as well as standards-based configuration, communication systems and technical applications oriented to the automation of discrete and continuous automation related to:

- International Fieldbus standard, IEC 61158 (IEC TC 65)
- European Fieldbus Norm, EN 50170 (CENELEC TC 65 CX)
- National Fieldbus standards like PROFIBUS, FIP, P-Net

All our knowledge is at your service!

- Actuator Sensor Interface (ASI)
- IEEE 802 LAN/WAN
- Utility Communications Architecture (UCA™), IEEE SCC 36
- Communication networks and systems in substations, IEC 61850 (IEC TC 57)
- Telecontrol equipment and system, IEC 60870-5-10x (IEC TC 57)
- Communications for monitoring and control of wind power plants, IEC 61400-25 (IEC TC 88)
- Communications for monitoring and control of wind power plants, IEC 61400-25-6 on Information models for condition monitoring systems (IEC TC 88)
- Communications Systems for Distributed Energy Resources (DER), IEC 62350 (IEC TC 57)
- Hydroelectric power plants – Communication for monitoring and control, IEC 62344 (IEC TC 57)
- Intercontrol Center Communications Protocol (ICCP), IEC 60870-6 TASE.2 (IEC TC 57)
- Common information models (CIM), IEC 61970 (IEC TC 57)
- Accreditation, Testing and Certification of IT products (DIN Test Lab Auditor), Quality Management
- Standard for the Exchange of Product Model Data (STEP)
- Application and Function block modeling IEC 61499 (IEC TC 65)
- Process Control Functionblocks and Device Description Language, IEC 61804 (IEC TC 65)
- Open Systems Application Frameworks, ISO 15745 (ISO TC 184 SC5)
- Manufacturing Automation Protocol (MAP), MiniMAP/FAIS
- Manufacturing Message Specification, MMS, ISO 9506 (ISO TC 184)

Learn firsthand what you need to know about these standards!

Mr. Schwarz has published some 100 technical articles and held more than 100 seminars, presentations and training courses:



3 day Seminar
Frankfurt (Germany)
Mai 2004



3 day Seminar
Bangalore (India)
April 2006



Please find some excerpts of papers and events under the following links:

http://www.nettedautomation.com/marketing/scc_publications/index.html

<http://www.nettedautomation.com/download/Sem/prog/Feedback-IEC61850-Seminars.pdf>

We possess the expertise and sophisticated capabilities that are truly essential for you!

Any question? Contact us by email: karlheinz.schwarz@nettedautomation.com

4. Mr. Schwarz' standardization experience

Mr. Schwarz is (was) a principal contributor in the following standardization projects (either project member or as the technical lead), representing the above listed groups:

ISO	ISO TC 184/SC5	Architecture, Communications, Integration Frameworks	Member
	ISO TC 184/SC5/WG 5	Open Systems Application Frameworks	Member
	ISO TC 184/SC5/WG 2	Communications and interconnection (MMS, ...)	Chairman
IEC	IEC TC 57	Power Systems Control and Associated Communications	Member
	IEC TC 57 SPAG	Strategic Policy Advisory Group	Invited Guest
	IEC TC 57 WG 07	Protocols compatible with ISO/OSI and ITU	Member
	IEC TC 57 WG 10	Power system IED communication and associated data models / Communication and systems within Substations (IEC 61850)	Member/editor of 61850
	IEC TC 57 WG 17	Communications Systems for Distributed Energy Resources (DER) – based on IEC 61850	Member
	IEC TC 57 WG 18	Hydroelectric power plants – Communication for monitoring and control – based on IEC 61850	Member
	IEC TC 57 WG 19	Interoperability within TC 57 in the long term	Member
	IEC TC 65 WG 6	Functionblocks (IEC 61499)	Member
	IEC TC 65 PJWG	Device Profiles	Member
	IEC TC 65C WG 1	Message data format for information transferred on process and control data highways, Profiles	Member
	IEC TC 65C WG 6	Fieldbus (IEC 61158)	Member
	IEC TC 65C WG 7	Functionblocks and Data Descriptive Language (IEC 61804)	Member
	IEC TC 88 PT 25	Communications for monitoring and control of wind power plants (IEC 61400-25-1/-2/-3/-4/-5) – based on IEC 61850	Member/editor of 61400-25
	IEC TC 88 PT 25 / IEC 61400-25-6	IEC 61400-25-6 – Logical node classes and data classes for condition monitoring	Convenor
	IEEE	IEEE 802.3 / .15	LAN, WAN
IEEE SCC 36		Utility Communication Architecture	Member
CENELEC	CENELEC TC 65 CX	Fieldbus Communication	Member
CEN	CEN TC 310/TG ICOM	Task Group on industrial communications	Member
MMS Forum	EPRI, Electric Power Research Institute	Communications and application modelling in the area of power utilities (UCA, ICCP)	Member
NAM	DKE/NAM/NI 96.5	Architektur und Kommunikation	Member
	DKE/NAM/NI GA 96.5.2	Kommunikation und Datenaustausch (MMS, ...)	Chairman
DKE	DKE FB 9 AK AP	FB 9 Arbeitskreis Arbeitsplanung	Member
	KG-ILT	Koordinierungsgruppe Industrielle Leittechnik	Member
	K 261	Mirror of IEC TC 8: System aspects of electrical energy supply	Member
	DKE K 950	Kommunikation und Informationslogistik	Member
	DKE AK 956.0.2	Kommunikationsdienste, Process Control	Member
	DKE K 956	Feldbus	Member
	DKE AK 956.3.1	Functionblocks and Data Descriptive Language	Chairman
	DKE K 952	Netzleittechnik	Vice Chairman
	DKE AK 952.0.7	Protocols compatible with ISO/OSI and ITU	Member
	DKE AK 952.0.10	Stationsleittechnik	Member
	DKE AK 952.0.17	Kommunikation für verteilte Energieversorgung (TC 57 WG 17)	Member
	DKE K 383.0.1	Kommunikation für Windenergieanlagen	Chairman
GMA	GMA AK 4.2	Kommunikation in verteilten Systemen	Member
VDMA	Fachverband InCom	Industrial Communications	Member
ZVEI	ZVEI GA IK	Gemeinschaftsausschuss Industrielle Kommunikation	Member