

Comprehensive & Independent Power Utility Automation Competence Center

The Future of Power Systems Requires Comprehensive Know-how

Smart Grids needs Smart People!

Experts in Relay Protection & IEC61850

STRI is an accredited high voltage laboratory and independent technology consultant that has built up competence, multivendor test facility and a partner network in order to support your organization to meet the coming challenges in the design, operation and maintenance of Power Utility Automation and Smart Grids. We now have a comprehensive group of experts with experience from protection, control and automation as well as expert knowledge of the communication technologies for the new power grid. Our team has a unique combination of practical know-how and theoretical knowledge. STRI Power Utility Automation Competence covers a wide range of solutions and interoperability laboratory with multivendor IED, tools & SCADA can act as your truly independent partner.



We offer customized in-house training as well as general seminars on Power system protection, IEC 61850 and integration of wind power to the electrical grid. (Examples Sweden, Germany, Italy, Brazil, Russia, Australia)

IEC 61850 is the global standard for Power Utility Automation and the base for a "Smart Grid". It allows for an open and "future proof" design, different architectures and possibilities to combine products from multiple vendors. In order for users and system integrators to utilize the benefits of IEC 61850 and the related IEC 61400-25 for wind power it is necessary for power utilities, integrators and vendors to educate their most crucial asset – people. It is time to start the migration to the smart grid. The future LAN and WAN based protection, control and automation systems will require both a deep and wide knowledge of all parts in this system.

STRI

Consulting, Software and Testing

Consulting Services in Power Utility Automation

Specification of protection, control, communication and substation automation:

Our specialists can assist you with functional or detailed specification of your system. We can assist you regarding all aspects of reliability, redundancy, communication and IT security. STRI can support you with planning, evaluation and feasibility for the new technology. With our know-how and cooperation with independent tool-vendors we can also assist in developing suitable engineering, documentation and maintenance processes based on the new Ethernet based standards for power utility automation.

Application, selection, setting and relay co-ordination studies:

Our specialists can assist you with functional or detailed specification of your system. This is especially a concern when applying IEC 61850 and will include many aspects on reliability, redundancy, communication and IT security. We can also assist in special application questions such as high-resistance faults, cable faults etc. Special applications with wind power and large cable networks can be studied. Utilizing NEPLAN software or other software we can provide relay coordination studies (Selectivity plans).

Interoperability and other testing, simulation and performance analysis of IEC 61850:

With our multivendor test facilities and experience we can assist manufacturers, engineering companies and power utilities in testing and verifying IEC 61850 solutions. Here a special concern is multivendor applications when interoperability has to be ensured between IEDs and tools as well as with RTU and SCADA communication. A STRI report can be issued describing each configuration, performed tests and results.

Independent disturbance analysis and fault tracing:

If a larger disturbance or special fault has occurred, STRI can perform an independent investigation. Through our own or partner software such as SIMPOW, NEPLAN & PSCAD/EMTDC or external software we can simulate fault condition and verify load and fault currents and voltages. We can even reproduce the simulated event and secondary system response in our test labs. Out of step conditions and harmonics can also be studied.

Theoretical and practical hands-on training:

STRI can offer different courses covering traditional "relay know-how" or special hands-on training on IEC 61850, and wind power integration including IEC 61400-25. This can be done in cooperation with partners, including NettedAutomation (Karlheinz Schwarz) & Helinks (Jörg Reuter). See example of training program at www.stri.se. STRI offers customized hands-on training at your site using our unique portable multivendor training equipment.

STRI Power Utility Automation Competence Centre

STRI offers unique combination of long experience and practical know-how of the latest products, tools and technologies. Our experts on PhD and MSc level covers areas from advanced power system studies to complex application questions and field testing. We provide the holistic approach needed for tomorrow's Smart Grid through our power system expertise combined with IEC 61850 and Communication Technology knowledge. Core team CVs and list of references are available on request.

Nicholas Etherden *IEC 61850 system integration, interoperability & configuration tools*

Anders Fahlström IEC61850 communication

Johan Gullberg IT Security

Lei Zhou **System studies**, System studies, SCADA/RTU

Gustavo Pinares Relay coordination

Math Bollen *System studies, reliability & power quality, Distributed Generation*

Mats Häger *System & relay coordination studies & power quality*

Carl Öhlen IEC 61850 & protection application, power utility automation, Smart Grids.



Consulting, Software and Testing

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