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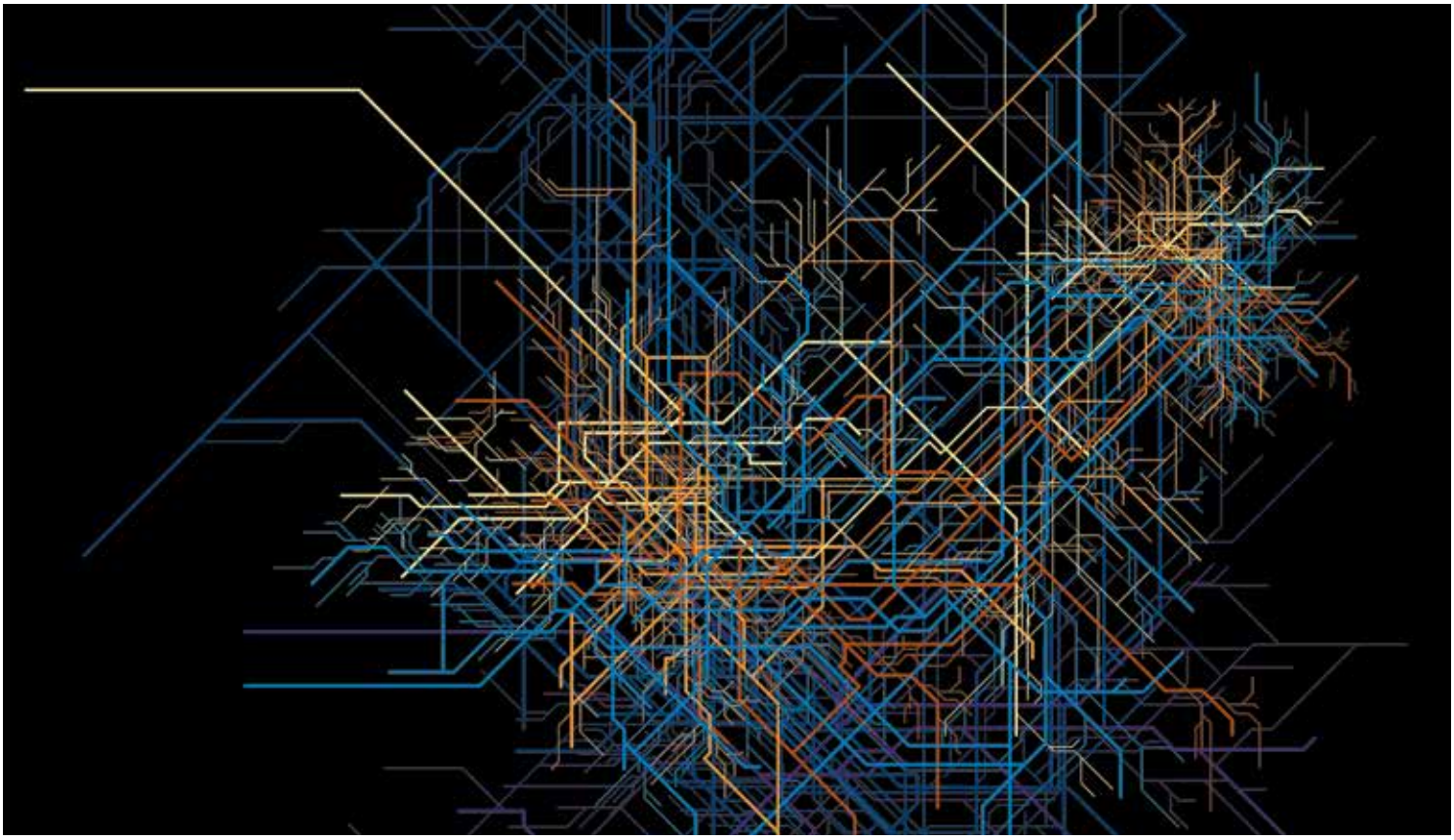
The customer newsletter of ABB
Network Management

network



MicroSCADA Pro helps restore power after winter storm

Substation automation product and service portfolio
ABB's world of substation automation solutions
New software capabilities announced at Ventyx World
Intuitive user interfaces, cloud-based solutions and InStep partnership

Power and productivity
for a better world™

network

Jens Birgersson
Business Unit Manager Network Management

Dear readers,

Welcome to the second edition of Network 2014, the customer newsletter of ABB's Network Management business,

In the northern hemisphere, we're moving into the summer months, but in the early spring this year, a Finnish utility was battling to restore power after a winter storm tore up trees and brought down power lines. Recovery was quicker than it might have been, thanks to an optimized MicroSCADA Pro installation, which helped to identify the location and nature of faults on the system, but the event was a stark reminder of how we rely on electricity to help us run our daily lives (including the refueling of emergency vehicles from gas stations with electrical pumps).

We also rely more and more on Internet connectivity in our daily lives, and Rick Nicholson of Ventyx points out that our growing use of social media is beginning to impact utilities. Read more about this and how it could lead to more efficient energy use and greater customer empowerment on page 6 of the newsletter.

At Ventyx World in Barcelona, the second of three regional customer conferences held by our enterprise software business, we learned about the new user interfaces and cloud-based solutions that are expanding the portfolio and delivering easy-to-use applications to our customers. If you haven't attended an event so far, read the news from Barcelona on page 8 and check page 17 for information on how to register to the final event this year in July.

The trade press has featured a number of articles about ABB technologies this quarter. A selection of those on our Tropos offering of wireless mesh broadband technologies are summarized on pages 9 and 10 of this issue. Follow the links to read the full articles on the publishers' own Web pages.

Complementing the software and communications articles in this issue, we have several pieces on our offering for digital substations. Demand is rising for the performance and safety improvements that come with the adoption of standard-compliant, digital technology, as discussed in the articles on pages 11 and 12. At ABB, we are rising to the challenge, working to deliver turnkey substations for Network Rail in the UK (page 14) and expanding our test and verification facilities for substation protection and control systems (page 15).

As we move into the third quarter of the year, I wish you success in your businesses and invite you to learn more about how our products, systems and services can help raise the performance of your operations. Contact one of our sales representatives for more information, or write to me directly with your questions.

Best regards

Jens Birgersson

News

Projects

Technology

MicroSCADA Pro helps restore power following Eino storm

128km/h winds, flying trees, and 200,000 homes in darkness

Photo credit: tpsdave, cco licence

On November 17 the Eino storm hit Finland, tearing up more than half a million trees with winds gusting at over 120 kilometers per hour. In the Pohjois-Karjalan Sähkö (PKS) control room they prepared for a long night as more than 200,000 homes were disconnected from the grid across the country.

It wasn't just a night either – the damage was so severe that some homes were without power the following day too – but with ABB's MicroSCADA Pro the company was at least able to track the faults and direct repair crews to where they could do most good, and learn some important lessons for the future.

"With the exception of few minor hitches, all the systems worked well, [MicroSCADA Pro] DMS600 distribution management system handled its basic tasks well," reports Matti Karhinen, engineer at the PKS operation center in Joensuu.

The problems started to appear at six am, though the engineers were already standing by as the storm had been seen approaching across the Norwegian Sea. The Finnish Meteorological Institute had

issued a “Level 2” warning, advising people to avoid travelling and to charge their mobile phones ahead of a possible power outage.

When the outage started PKS staff were quick to start isolating problem areas, to keep power flowing to as many people as possible, and restore power where alternative delivery routes were available. Meanwhile the DMS was busy sending out 200,000 text messages to subscribers, letting them know the power was failing and that the company was already working to restore it.

“When the ruckus begins, you feel disconsolate for a while but I know from experience that you can get through anything” explained Karhinen, though some problems can’t be mitigated easily.

A late winter had left the ground unfrozen in many areas, making it easier for the gusting wind to uproot and topple trees, many of which took power lines with them. Emergency teams working in the November night found it impossible to refuel their vehicles, as filling stations in remote areas lacked the power to pump the petrol, further hindering the repair efforts.

But staff morale was key to getting the power back on. Prepared for action, and well briefed on the situation, they were able to apply themselves to the problem: “We, here at PKS and our contracting company Enerke still retain a fighting spirit: We work until we have returned power as quickly as possible. At times, you had to walk employees to the door to make sure they left work,” remembers Karhinen, talking about the days following the storm.

Karhinen reckons the Eino storm took out about a third of the PKS network. A significant outage, but not nearly as bad as the Hannu-Tapani storm of two years earlier, which took out 90 percent of the network. “Compared to Eino, Hannu-Tapani was in a class of its own” says Karhinen. Following Eino it took a day to get the 20 kV lines back up, with low-voltage systems coming back on line within another two or three days. When Hannu-Tapani hit, in 2011, some lines were still down two weeks later.

Part of that improved performance is down to the DMS600 system, which can quickly show where a problem is (geographically) as well as what it is (within the logic of the distribution network). The system was in use in 2011, but is constantly being refined as PKS learns how to apply its features to improve their network.

“In the future, the system will be able to find failures more efficiently and also isolate them automatically. The time required for failure periods and repairs will be known even better than before!”, says ABB’s Jussi Ahola, who’s been working with PKS to refine the system.

Increasing the intelligence of the network means providing greater visibility, so that engineers can quickly understand the logistical impact of an outage, along with its geographical effect. For PKS that means prioritizing connections to customers who’ve paid for service-level agreements, as those agreements require financial restitution for any outage lasting more than 12 hours.

As the smart gird extends to the edge of the network, from transmission through distribution and into domestic settings, so the utilities get better visibility over the entire operation, something that provides value, even when the network is operating perfectly. But when the network fails, the ability to see and react to changes as they happen are of inestimable value, and working with ABB, PKS has been able to continuously improve its ability to do just that.

Winter storms will always knock down trees, and trees will always drag power lines down with them, but with the right management systems, and dedicated staff to use them, the impact can be minimized, as PKS has dramatically demonstrated.

Contact: elina.hakkarainen@fl.abb.com

Utility customers' demand for social media is on the rise

Industry is starting to listen
By Rick Nicholson

Rick Nicholson is Senior Vice President, Transmission & Distribution Solutions, at Ventyx, an ABB company.

If your McDonald's fries aren't crisp enough, social media offers ways to lodge a complaint – and get a response – while you're still in the drive-thru. If the fashion site **Net-a-Porter** wants you to know culottes are in for spring, it can flood your favorite social media with the news. Fries and culottes are important, but not quite as important as power outages and service restoration. It just makes sense for your local utility to be as present, expert and available in social media as fast food chains and e-commerce sites.

Utility customers agree, and their appetite for social media is growing. Two years ago, an Accenture **study** found 30 percent of customers were open to interacting with utilities through social media, up from just 1 percent in 2010. Now, in March 2014 Ventyx survey finds the upward trend continuing:

- 54 percent of respondents say local utilities should use social media channels to share real-time information and warnings on approaching storms, power outages and service restoration times.

- Underlining the interactive value of social media, 50 percent say that, in addition to receiving information from their electric utility about emergency situations, outages and repairs, they want to communicate with their utility through social media to ask questions, express opinions and add localized information that would help other customers in their community.

Historically, utilities are classic late-adopters of the new. They're given incentives to avoid risk- by the regulations and regulators that control the industry. Some utilities offer opt-in email programs for power-outage notifications, but in the nearly 50 percent of American homes without smart meters, in many cases utilities won't know you've lost power until you report it.

Spurred in part by the crises of major storms, the industry is catching up fast. A big storm in the Chicago area in July 2011, for example, switched on the social media light for ComEd, one of the largest utilities in the United States. The storm left more than 850,000 customers without power. ComEd published information about outages and power restoration on its website and through phones, SMS text, email and faxes (yes, faxes), but in hindsight realized that conflicting information was being pushed out in different channels, and that customers using Twitter amongst themselves had more timely and accurate information. The result was a new, multi-channel solution ComEd calls its Outage Communications System (OCS), powered by a component of Ventyx's Outage Lifecycle Management solution, which the utility describes as its "single version of the truth." Everyone inside ComEd and customers seeking information from ComEd through multiple channels, including mobile and social, get the same up-to-the-moment information at the same time.

Fifteen months later, in October 2012, Hurricane Sandy devastated a broad swath of the East Coast and left millions without power…and without good information about when the power was coming back. The six-state service area of Charlotte, North Carolina-based Duke Energy escaped major damage, so Duke dispatched 3,000 workers to assist in power-restoration in the Mid-Atlantic and Northeast. In addition to technicians, Duke also sent communications staffers, who worked alongside

crews, posting updates and photos of the repairs on personal and Duke Energy social and website channels. The quality and real-time freshness of Duke's onsite tweets and posts prompted major media outlets to use the information in its coverage of disaster recovery.

It's not that utilities don't get the potential value of social media. Of the 50 largest American utilities, 49 currently have active Twitter accounts, all have Facebook accounts and 15 have mobile apps, according to a new **study** by the Washington, DC, research organization the Northeast Group. But, less than 1 percent of customers follow their local utilities on Twitter, the same study showed. The ComEd and Duke Energy examples show what's possible. And, utilities could accomplish even more:

- Customer-to-utility communication: Customers can post photos of downed power lines (as long as they stay at a safe distance) so utilities will know exactly what caused the outage, and how to repair it fastest.

- Social analytics: Monitoring and analyzing social media, utilities could pinpoint outages people are tweeting about, even if those tweets aren't being sent directly to the utility. Following social media trends by geography could alert utilities when certain neighborhoods are likely to adopt plug-in electric vehicles or rooftop solar, allowing the utilities to develop appropriate programs before they're needed.

- Nudging customers to do the right thing: Utilities currently struggle to enroll customers in energy efficiency and demand response programs (just promoting the programs on websites is too passive). Using social media to tell people, "45 percent of the people in your neighborhood have signed up" would encourage more people to join.

As utilities awake to the full spectrum of value they can deliver through social media, they are partnering with such young, social-adept companies as **Opower** and **Simple Energy**, among others, not to sell fries or culottes, but to deliver truly important things – more efficient energy usage, faster outage repairs and customers empowered to manage and benefit from their relationship with energy and the utilities that provide it.

This article is from a post first published by Ventyx, an ABB Company, on its blog. To read more articles from the blog, visit **conversations.**

Contact: rick.nicholson@ventyx.abb.com

New software capabilities announced at Ventyx World

Intuitive user interface, cloud-based solutions and InStep partnership

Ventyx World in Barcelona was the second of three regional events. The APAC event will be in July or Australias gold coast.

Ventyx held customer conferences in Orlando, Florida, and Barcelona, this quarter, with a third event to be held on Austalia's Gold Coast in July. The conferences are an opportunity for customers to discuss applications for their industries, directly with the software experts and to catch up on the latest upgrades available from Ventyx.

The intuitive interface of the new UX announced at the Orlando event enables operators to focus on their core responsibilities, rather than worrying about how to operate the tool. By combining Operational Technology (OT) with Information Technology (IT), Ventyx software converts large volumes of data, generated by increasingly intelligent infrastructure, into actionable information that can be easily accessed via the UX. By presenting this information to operators via customized graphical interfaces, the UX enables users — from field crews and control center operators to company executives — to make better-informed decisions and run their operations more effectively.

Ventyx's cloud-based software solutions maximize flexibility and help users optimize capital expenditure in mining and utility applications. By offering Software as a Service (SaaS) through the highly versatile medium of the cloud, Ventyx can offer its asset management solutions at reduced hardware costs to the customer and key mining solutions as a "pay-as-you-go" service. In addition to the inherent cost reductions delivered by the software's functionality, this purchasing model eliminates up-front capital investments in enterprise software. It is particularly suitable for small- to medium-sized organizations, though it can be scaled easily to accommodate the needs of large enterprises.

Ventyx's new partnership with InStep Software, a leading provider of predictive monitoring software, will combine InStep's PRiSM software for predictive monitoring with Ventyx's Asset Performance Management solutions, delivering a comprehensive platform for reducing unplanned stoppages, optimizing maintenance costs and increasing equipment availability.

Acquired by ABB in 2010 to strengthen the existing Network Management business, Ventyx serves customers in asset-intensive industries, from mining, chemical, oil & gas and power to public utilities and energy markets. The Company continually updates its portfolio to reflect advances in computing and the dynamic environment in which its customers operate.

The Ventyx portfolio helps customers to improve the performance of their operations, from plant automation through network-, asset- and workforce management. The solutions minimize the risk of failure and enhance safety and equipment availability to avoid unexpected breakdowns and optimize capital expenditure. They also help customers to navigate the complex regulatory environments in which many of them operate.

As software now plays a central role in most of the world's critical infrastructure, ABB's unique combination of IT and OT, software and hardware and deep industry expertise from a single provider, brings significant advantages to customers.

For more information about Ventyx software or to register for Ventyx World on Australia's Gold Coast, which will take place on July 23-24, 2014, follow the links below.

Ventyx web site: www.ventyx.com
Ventyx World: registration page

Contact:gary.frazier@ventyx.abb.com

Communication Networks in the press

Industrial companies enhance reliability and productivity using high-tech applications. ABB's tropos wireless networks underpin these systems in smart grids, digital oil fields and more.

Broadband wireless mesh networks enable applications that improve the reliability, productivity and safety of industrial operations. Follow the links on page 10 to trade-press articles that outline the requirements, including security needs, for the communication networks that enable these hardware/software systems and explain how Tropos broadband wireless mesh networks meet these requirements.

Contact: bert.williams@nam.abb.com

Security protocols: using enterprise tools to secure wireles field area communication networks.

Wireless IP field area communication networks for utilities provide substantial value but similar to other networks, come with potential vulnerability to cyber attacks. The robust, time tested set of tools and techniques that have been developed to combat cyber attacks on enterprises can provide cyber security for field networks that is comparable to that of most mission-critical enterprise networks in the world.

Read the full article in the May issue of Electricity Today **here**.

Securing Wireless Communication Networks

Modern process control, supervisory control and data acquisition (SCADA) and other industrial automation systems increasingly use two-way information flow to enhance business and process interaction. Oil and gas exploration and production firms monitor and control drilling rigs and wellheads. Electric utilities do the same with substations and distribution feeders. Ditto for water utilities with tanks and lift stations. The list extends to other industries with far-flung assets as well.
The sheer size of the geographic area that requires connectivity, as well as the mobility requirements of a mobile workforce, dictates that remote industrial automation communication be implemented using wireless networks. In addition to wireless, Internet Protocol (IP) is also being adopted as a foundational standard. As a result, wireless IP communication network security is becoming a more and more important topic.

Read the full article in the March issue of Remote Site + Equipment Management **here**.

Wireless Field Area Networks: Key Foundation for Smart Grid Applications

Communication networks are a key component to smart grid implementation. Utilities implementing smart grid communication networks generally use a multi-tier network architecture. A number of wireless technology choices are available to Tier 2 network – the field area network or FAN. When comparing the capabilities of these technology choices to the requirements of the FAN, broadband wireless mesh networks, supplemented by PTMP links when necessary, provide the best match to the requirements.

Read the full article in the March/April issue of Electric Energy T&D **here**.

Wireless Field Area Communication Networks for Digital Oil and Gas Fields

A wireless broadband network that provides a scalable and reliable next-generation communications platform can securely support multiple digital oil and gas applications on one low-cost physical infrastructure. Wireless field area networks implemented with mesh technology can significantly enhance the efficiency, productivity, safety and security of oil and gas exploration and production.

Full article in Spring issue of Remote Site + Equipment Management **here**.

Substations go digital

With IEC 61850 the digital substation has become reality. Hundreds of copper wires can be replaced by a few Ethernet cables, provide a flexible and secure alternative to today's traditional substations.

Since its introduction, the main appeal of the IEC 61850 standard for substation communications has been its promise of true interoperability, a variety of devices from multiple manufacturers all able to communicate with one another. Indeed, this remains a key advantage for utilities that choose to implement the standard.

However, now that IEC 61850 has been widely adopted, other benefits are coming to the fore as well. At the top of the list is safety.

A typical substation today contains hundreds of copper wires connecting primary equipment at the process level with IEDs at the bay level. Aside of the materials cost and labor, associated with installing them, each of these connections represent a potential hazard. For example, if the connections from a current transformer are interrupted without first securing the secondary circuit, dangerous voltage levels on the secondary circuit could cause a deadly explosion.

IEC 61850 enables an alternative, the digital substation, where the hundreds of wires are replaced by a few Ethernet cables. Electrical signals are digitized at their source and the bay level IEDs are connected to the primary equipment by process bus, a pathway that is optical rather than electrical. The result is a higher level of safety because utility workers can perform repairs or system changes to the process bus at a secure distance from the primary equipment.

Digital substations are also inherently more flexible than their hardwired predecessors and that can be very useful if changes need to be made midway through the construction and commissioning process. Many adjustments can be made to the digital model of the substation instead of touching the physical wiring. This cuts down substantially on engineering time and on-site costs.

Over the life of the facility, the digital substation's reliability advantages come into play. ABB installed more than 300 non-conventional instrument transformers (NCITs) in various substations owned by Powerlink and over ten years of service the Queensland, Australia utility never experienced a single failure of the primary sensors.

Digital substations capture both analog measurements like voltage and current as well as binary values such as the position of a switch over the same communications pathways. This network also serves to deliver operational commands from the bay level IEDs like trip and close commands for circuit breakers and disconnectors.

With the proliferation of analytics and applications that feed on substation data, the integrity of the communications network and the data flowing over it takes on greater and greater importance. Digitizing substations, then, can be viewed as an investment in future-proofing, whether in a greenfield or retrofit context. Streamlining data collection and removing utility workers from potentially dangerous situations are compelling reasons to embrace digital substations, but as we've noted here there is also a solid business case.

Contact: bob.fesmire@us.abb.com

ABB played a leading role in the development and implementation of IEC 61850 standard.

Substation automation product and service portfolio

ABB's world of substation automation solutions

A world-leader in substation automation, ABB delivered the first commercial installation of IEC 61850-9-2 process bus technology at Loganlea in Queensland, Australia.

In today's increasingly competitive world any loss of power means a loss in profitability. Utility networks have a duty to keep the lights on, and their performance is regulated by measures such as Customer Minutes Lost/Customer Interruptions. Equally, industrial networks demand continuity and security of power supply to keep their processes running. A halted process can soon result in massive losses. For example, if an oil refinery loses its supply, it can be two weeks before it is back up and running. Substation automation schemes play a vital role in keeping power interruptions to a minimum.

Protection
is used to detect power system faults and other abnormal conditions. It also protects human life and valuable equipment. In the home, this protection comes in the form of fuses in plugs, and MCBs (miniature circuit breakers) in the consumer unit. There are also RCDs (residual current devices) that detect an earth fault, tripping the circuit before any serious harm occurs. The protection used on power networks is essentially the same, just on a much larger and more sophisticated scale. The quality of a protection scheme tends to be measured in terms of its reliability, speed and selectivity:

- a reliable protection relay operates correctly when there is a power system fault, but doesn't make an incorrect operation when no fault is present
- speed is the minimum operating time to clear a fault
- to avoid damaging equipment and causing system instability
- selectivity means only disconnecting the faulted section of the network or plant, preserving continuity for the rest of the supply or system

Main and back-up protection
In general, main and back-up protection is applied. Main protection operates every time a fault is detected. Back-up protection is set to operate should the main protection fail to operate.

Overcurrent
is most the basic form of protection and is used at all voltage levels. To achieve selectivity, the protection is graded according to time and/or current (higher fault current = faster operating time, lower fault current = slower operating time). If circuits are in parallel, or if there are multiple sources, the direction of the current needs to be considered, so directional overcurrent protection is used.

Differential
(unit) protection is applied to lines, transformers, motors, generators and bus-bars. This is absolutely discriminative/ selective protection, but it requires communication either via copper pilots or other more advanced forms such as telephone circuits or optical fibres.

Distance
(non-unit) protection discriminates between faults by measuring the impedance of the line. The line generally has a constant impedance (independent of current and voltage levels). It doesn't require communications but can use them to help increase speed, or selectivity/security.

Signaling
Teleprotection signalling can be used in conjunction with distance protection to provide increased selectivity and faster tripping times, using communications infrastructure such as pilot wires or SDH (synchronous digital hierarchy)/PDH (plesiochronous digital hierarchy) networks. Intertripping uses similar communications channels to pass trip signals from one substation to another to ensure that both ends of a faulty circuit are disconnected from the healthy power system.

Loadshedding
When generation capacity cannot support the load then the balance between generation and load needs to be addressed. The indication that generation is not matching the load is a drop in voltage and/or frequency. Loadshedding schemes are used to disconnect less important loads to help redress the balance. Of course, measuring power in and out would also indicate the loss of balance.

Contact: hugo.e.meier@ch.abb.com

Training

Training is vital in helping our customers to improve their understanding of how to use their individual equipment or system, and how to operate their entire power distribution and transmission processes most efficiently.

Furthermore, training provides:
– improved efficiency in process operation
– faster and safer operational decision making
– improved knowledge in adapting products to specific requirements
– one-to-one contact with ABB's fully trained and experienced instructors.

Depending on specific requirements, training is provided by ABB in the UK and/or the ABB universities in Vaasa (Finland), Västerås (Sweden) and Baden (Switzerland).

Customer training session

On track for rail electrification

ABB in consortium to deliver turnkey project for Network Rail in the UK

ABB and UK Power Networks Services (UKPN) have joined forces in a consortium to deliver a turnkey project for Network Rail's Great Western Electrification Program (GWEP). Worth around £170 million, split equally between the consortium partners, the project will make Great Western Railway journeys more reliable, greener and smoother for passengers, as well as quieter for people living near the railway.

Part of the Great Western Electrification Program, this project is the first sizable electrification work to be undertaken by Network Rail in over 30 years. The upgrade, which includes the delivery of more than 30 new traction substations, will improve one of Britain's oldest and busiest railways to improve reliability and provide better connections between towns and cities across southern England and Wales.

The new substations will be based on ABB's unique modular Structure Mounted Outdoor Switchgear (SMOS) Light concept, which helps to reduce construction, testing and commissioning times by as much as 30 percent.

ABB will also deliver advanced protection and control systems for the project. The specific protection and control concept was developed to suit Network Rail's own Rationalised Autotransformer Scheme. It's a highly sophisticated method of deploying the global IEC 61850 open communications standard, providing a cost-effective solution that ensures interoperability of compliant devices, even if supplied by different vendors.

The protection and control equipment will be installed in a portable, fully containerized Auxiliary Equipment Enclosure (AEE) that is integrated and tested through the ABB UK System Verification Facility (SVF) in Stone, UK. This provides a virtual plug-and-play solution. The first substation is scheduled for commissioning in 2015 and the project is expected to be completed in 2017.

Urbanization, economic growth and environmental concerns in emerging markets are some of the key trends supporting the expansion of rail networks in many parts of the world. ABB has a wide range of power and automation products and solutions for urban, conventional and high-speed rail applications and has built up an extensive global installed base. This includes alternating current (AC) and direct current (DC) traction substations and railway electrification solutions for mainline trains, metros and mass-transit networks.

Contact: karen.strong@gb.abb.com

Steve Wright and Bill Henry of Network Rail with Stewart Dawson of UK Power Networks Services and ABB's Stephen Trotter

Unique facility 'de-risks' substation automation projects

ABB's showcase System Verification Facility in the UK sees further expansion. Andy Osiecki explains the benefits.

Andy Osiecki, Head of ABB's Network Management business in the UK

The establishment of the SVF in 2006 represented an important change in ABB's philosophy for carrying out the vital System Verifaction Facility (SVF) procedures for substation protection and control systems. So rather than carrying out limited representative pre-site tests, we decided, in close consultation with our customers, to establish a rigorous test regime that replicates the actual installed arrangement as closely as possible and effectively 'transports' much of the final commissioning elements from site to the earlier verification stage. This 'transportable commissioning' approach means using the same IEDs (intelligent electronic devices) that will be deployed and uploading them with project specific settings and configurations.

Furthermore, instead of hooking up the IEDs and relays to a network of switches, relays and lamps selected to simulate the substation plant, the computer-controlled SVS (system verification system) is linked to ABB's own engineered modules that simulate the behaviour of substation plant such as circuit breakers, disconnectors and earthing switches. Not only do we duplicate the whole substation within the SVF, these automated, self- monitoring, fully repeatable test sequences establish the correct interaction with the protection and control panels. Over a period of time we have established a library of test routines to cover all potential situations.

A high level of factory testing avoids the need for significant work on-site

Transportable commissioning – the factor of ten

The SVF has emerged as a key differentiator for ABB as customers particularly value the capability to come to Stone to witness their protection and control schemes being tested in real-life conditions. And we have shown that this approach can help drive down overall costs. There is a simple rule of thumb that applies. If an issue discovered at the FAT stage costs say $10 to rectify, then it will almost certainly cost $100 to fix on site. The transportable commissioning approach can reduce site based snagging and rework by a factor of ten and this is a powerful argument for this value added approach through extensive SVF testing.

Fast and smooth commissioning

A further major benefit of the SVF is that reducing the need for outages on site is a key priority for many customers, especially in the utilities. A high level of factory testing avoids the need for significant fault finding and rectification on site. So delivering the protection and control systems virtually ready to go ensures a fast and smooth commissioning process that effectively de-risks the project.

Drivers for expansion
There were two main drivers for the expansion of the SVF. First we simply needed much greater capacity. In 2006, the largest FAT of its type ever carried out saw the SVF packed with 60 cubicles of protection and control equipment destined for National Grid's new indoor 275 kV GIS (gas insulated switchgear) substation at Stalybridge, near Manchester in the UK. Following the expansion, the SVF was able to accommodate comfortably over 120 cubicles for the Connah's Quay project near Liverpool, UK – ABB's largest ever substation project.

The second driver was that the IEC 61850 standard, which places a major emphasis on the role of the IEDs, is essentially the default choice for the majority of our substation projects. The SVF is playing a key part in ensuring customer acceptance of ABB's innovative Relion® family of IEDs developed specifically to implement the core values of the new standard through full native compliance.

Customers can witness their schemes being tested in real-life conditions
The trend to PRRs
An important new trend in the industry, which further reinforces the strategic significance of the SVF, is the move towards portable relay rooms (PRRs). These fully containerized relay rooms bring together all the vital protection and control cubicles and accessories in a fully tested factory-assembled package that creates what is virtually a 'plug and play' solution.

Engineering and service resource
There is more to the SVF than carrying out FATs. It is also a vital resource that enables us to develop our engineering and service capabilities using setups that duplicate real-life scenarios. It provides trainees with 'hands-on' experience in safe, fully controlled conditions.

Total confidence
The UK facility is modelled on ABB's System Verification Centre in Baden, Switzerland, which is qualified for IEC 61850 by UCA International. It represents a very significant investment by ABB, not only in the equipment but also in building the team of highly skilled and experienced test engineers who run the FATs. We believe that the investment will continue to generate significant payback by enabling customers to reduce their on-site commissioning and fault finding costs, minimize outages and establish total confidence that their protection and control scheme will function exactly as designed in any operational scenario.

Contact: andy.osiecki@gb.abb.com

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Gold Coast Keynote Speakers

Morris Miselowski, Business Futurist, Professional Speaker, Innovator, Media Commentator

Miselowski has 30 years of experience in business and strategic future forecasting for a wide range of public and private organizations through the consulting firm he founded in 1981, Success Through Focus, his equity partnership firm Futurevation, and his speaking business Eye on the Future. As a speaker, strategist, consultant, and mentor, he provides prescient, practical advice to CEOs and decision-makers at organizations around the world.

His clients have included blue-chip companies like nab, Mercedes Benz, HBA, UBS, Toll, RMIT, Ernst & Young, Danone, Phillips, Toshiba, and IGA. He is also in demand as a media commentator with radio shows on ABC Australia across Asia Pacific and 6PR in Perth and on a podcast on the world's premium content network CBS Interactive and makes regular appearances on television, radio, print, and online media.

Kim Wood, CEO (Hunter Water)

Kim Wood has extensive utility experience as a CEO for a number of electric and water utilities throughout Australia, such as Queensland's Allconnex Water, City West Water, the Victorian electricity transmission business GPU PowerNet, the Northern Territory Power and Water Corporation, and the Queensland power generator Stanwell Corporation. Wood's past experience also includes private-sector leadership roles in the telecommunications industry, firstly as Managing Director of GEC Plessey Telecommunications and later with the publicly listed company DataFast.

Wood also has extensive experience as a company director, including several industry association directorships. He has prior senior management experience with the Australian operations of both Hewlett-Packard and Bell South. He commenced his working career as an engineer with Victoria's State Electricity Commission. Also, he holds a Bachelors in Engineering and a Masters in Business Administration and is a Member of the Australian Institute of Company Directors, Fellow of the Australian Institute of Management, and Fellow of the Institution of Engineers Australia.

George Gregan, Rugby Player

George Gregan is an Australian rugby player who has made more appearances for his national team than any other player in the sport's history. He has captained the team to many victories, and he is respected throughout the rugby world for his tenacity, tactical skill, leadership ability, and sportsmanship, but is also known for his 'talk-back' to referees.

Gregan has played Super 14 for the ACT Brumbies since the inception of that competition in 1996, helping to lead them to overall victories in 2001 and 2004. He is a foundation Brumbies player and one of the few players whose careers span over both the amateur and professional eras.

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Published by
Siân Curtis
sian.curtis@ch.abb.com

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