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network



Jens Birgersson

Business Unit Manager Network Management

Dear readers,

Welcome to the first edition of Network for 2012, with news of some exciting new projects that will enhance the reliability and performance of our customers' operations.

Among the new orders we have won this quarter are contracts to provide automation systems for substations in Bangladesh, where new generation capacity is being connected to the grid, and we're teaming up with ABB's substation business to help Rio Tinto power its mining operations in Western Australia. In another contract won last month, we will extend Dubai airport's SCADA system to meet increasing demand for power.

We have also been working with customers and partners this quarter, providing updates on developments in our smart grid offering at ABB's Smart Grid Center of Excellence in the United States, and holding a series of seminars in Oman. The benefits of close collaboration can be seen in the article on SafeLink Automation, where we worked with a customer on the development of a new substation automation package.

This quarter also saw the relaunch of our combined Ventyx and Mincom software businesses under the new Ventyx brand, cementing our position as the leading provider of industrial enterprise software for asset-intensive industries.

As always, I hope you enjoy this dip into the world of Network Management and look forward to hearing from you.

Best regards,

A handwritten signature in black ink, appearing to read "Jens Birgersson".



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Improving grid reliability at Dubai International Airport

ABB has won a contract for the extension of the existing ABB SCADA monitoring system at the Dubai Airport in the UAE, a major global aviation hub. The contract was awarded by Dubai Aviation City Corporation (DACC) – Engineering Projects.

The airport-wide electrical SCADA system gives the airport operational staff an excellent overview of the status of the electrical distribution system in the whole area. The scope of supply for the extension project includes RTUs (remote terminal units), telecommunication equipment and integration of new field equipment into the SCADA system. The ABB system allows full supervision and easy operation of the electrical grid of a modern airport that operates 24 hours a

day, seven days a week, ranked as the fourth busiest airport in the world.

ABB was first awarded the project for the implementation of the Airport Distribution SCADA (11kV network) in 2004. Earlier, ABB installed RTUs, fiber optic cables (for SCADA system) and integrated RTUs (for ring main units) and PLCs (power line carriers) from the main distribution system, creating a state-of-the-art, in-plant SCADA system. This additional work will see RTUs, telecommunication and inte-

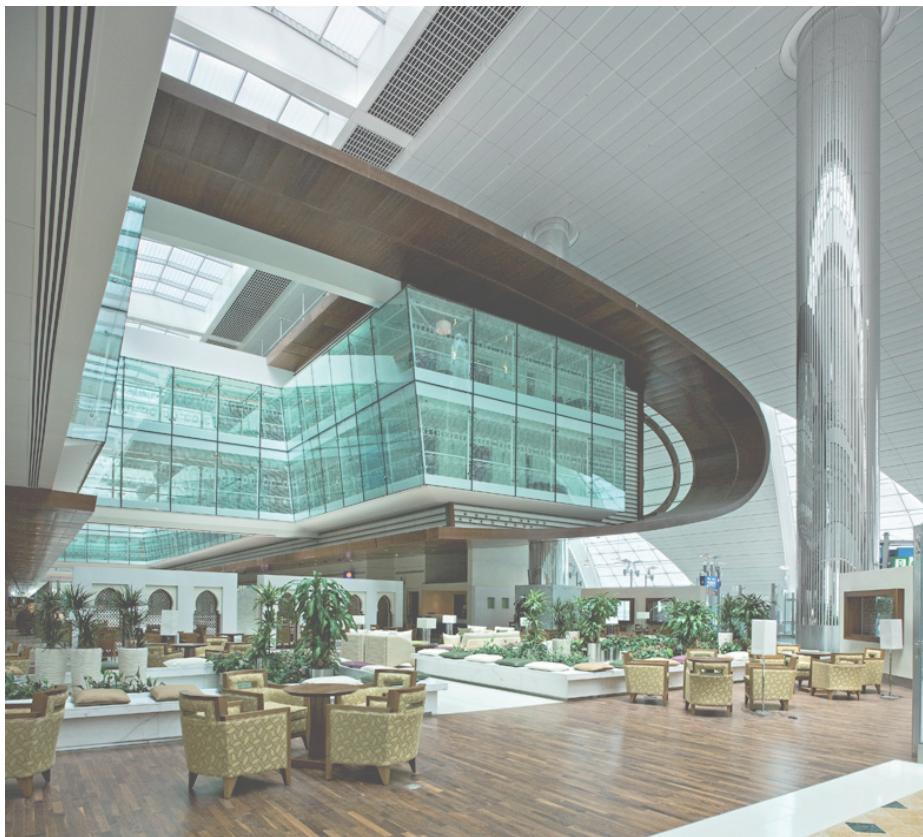
gration of new field equipment into the SCADA system.

"Implementing the first SCADA system was the beginning of a successful partnership. Additional requirements made it necessary to expand the system, adding more data, more substations and more distribution equipment. We are delighted that a new contract has been signed between ABB and DACC, Engineering Projects, to further develop the SCADA System," said Johan de Villiers, ABB's local division manager, Power Systems, Gulf.

The SCADA system, which is now offered as part of ABB's Ventyx portfolio, includes functionality such as dynamic network coloring, giving the operators an easy-to-read overview of the connectivity of the system. In addition, it provides gas turbine logic that automatically connects loads to the system after ramping up emergency gas turbines that will be started only in case of a blackout (i.e., losing the 132kV connections with the electrical supplier).

ABB is a leader in SCADA solutions for the oil and gas, power transmission and distribution, alternative energy, and water and wastewater markets and has extensive SCADA experience focusing on efficient, safe and profitable SCADA operations for customers.

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Dubai International Airport, which operates 24 hours a day, seven days a week, is the 4th busiest airport in the world.

Multiple orders for substation automation systems in Bangladesh

ABB technologies to improve efficiency and reliability, improving the productivity in the Bangladesh grid.

Bangladesh is a country with 160 million inhabitants and an installed power generation capacity of just 7.5 GW. Compare this to Germany's population of a little over 80 million and its capacity of almost 120 GW and you will understand the urgency with which Bangladesh is working to improve its power system.

A national development initiative is currently working to increase the generation and transmission capacity of the Bangladeshi power system. The aim is to meet rising demand for electricity in a country that suffers from extreme power shortages, blackouts, and load shedding, all of which inhibit social and economic development. ABB has made a number of deliveries to help improve the Bangladeshi power system over the years and in 2011 received orders for a total of six substation automation systems for key installations in the national grid.

One of the new orders is for the 230kV Manik Nagar substation, on the eastern part of the capital city, Dhaka. This is Bangladesh's first 230 kV substation to be equipped with gas-insulated switchgear (GIS). The IEC 61850 compliant substation automation system, including high-performance protection and control devices, will help to maintain the reliability of the electricity supply from the Siddhirganj power plant through the Siddhirganj-Manik Nagar 230kV transmission line to the city's population of more than 14 million people.

A similar delivery will be made to substations serving the Haripur 360 MW combined-cycle power plant (CCPP) project,

situated in the south-east part of Dhaka, and the Khulna substation, in south-west Bangladesh. The installations are owned and shall be operated by the generation utility, Electricity Generation Company of Bangladesh Limited (EGCB) and the North West Power Generation Company Limited, respectively.

Installing modern systems that comply with international standards for substation automation will provide advanced monitoring and control facilities that send detailed information on the conditions in the grid to central control rooms. This enables remedial action to be taken quickly and effectively by operators who are able to identify the location and nature of disturbances more accurately, leading to dramatic improvements in the number and duration of blackouts.

In addition to being more reliable, the new substation automation systems are also more cost effective than their conventional alternatives. The new systems use Ethernet with fiber optics, which reduce, and in many cases avoid, the need for expensive and space-consuming copper cables. The IEC 61850 protocol used by the systems is not tied to any particular supplier, which means that compliant devices can work hand-in-hand with existing infrastructure, protecting previous investments and extending the life of established installations.

The benefits of a reliable electricity system are many fold. Fewer blackouts means more revenue for the utilities as they deliver more electricity to end-users, and end users benefit from continuous supplies of



Substation automation systems play a key role in maintaining grid reliability.

electricity to keep their businesses running, without needing to keep noisy, dirty and expensive diesel generators on standby.

A number of new gas-fired combined cycle power plants, like Haripur 360 MW CCPP, are being built in Bangladesh. These highly efficient plants are fuelled by natural gas from the country's own reserves, which provide a cheaper and less environmentally damaging alternative to imported coal and oil.

ABB installed the first substation automation system in Bangladesh some seven years ago and has extensive experience both in the field and specifically in Bangladesh. These substation automation system orders were booked thanks to ABB's reputation for delivering high-quality projects and its ability to meet the customers' exacting requirements, on time and on budget.

The new installations will be delivered in 2012 and all projects are planned for completion by the end of the year.

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ABB's Smart Grid Center of Excellence opens in the United States

New technologies help cities keep the power “on” despite severe weather.

ABB's new Smart Grid Center of Excellence (COE), the nation's first-of-its-kind smart grid demonstration center and verification lab, was unveiled at last week's ribbon cutting ceremony on North Carolina State University's Centennial Campus in the United States. Several local dignitaries attended the event including the Mayor of Raleigh, Nancy McFarlane; NC State Chancellor, Dr. Randy Woodson; and ABB North America Regional Manager, Enrique Santacana. These officials as well as other attendees toured the facility to learn how ABB's cutting-edge smart grid hardware and software solutions can help prepare cities to deal with weather emergencies.

“The COE is designed to help visitors understand the breadth of technologies in ABB's smart grid portfolio and how they can be used to improve the nation's grid. Additionally, the center emphasizes ABB's commitment to the smart grid and helping our customers enhance reliability, efficiency, sustainability, customer engagement, and operational effectiveness.”

Brad Luyster, Manager of the Smart Grid Center of Excellence



The COE will help visitors to understand the breadth of ABB's smart grid portfolio



Brad Luyster, manager of the Smart Grid Center answers journalists' questions at the official opening.

On one side of the center, visitors can watch educational videos and presentations, and engage in constructive discussions on topics such as demand response management systems (DRMS), microgrids, distribution management systems (DMS), microSCADA, cyber security, and communications. This part of the center also includes several interactive areas where we can physically show how the different layers of the smart grid work together. For example, we can simulate a fault detection, isolation, and restoration (FDIR) event where ABB hardware and software work together to reduce power outages and improve reliability – a clear benefit for both the utility and the consumer.

The other side of the center functions as the demonstration and verification area. Here, there is a series of wooden poles mounted with ABB hardware such as capacitor banks and reclosers – just like you

would see driving down the road. In this part of the center, we can actually operate the physical devices and demonstrate how the smart grid reacts and communicates to improve reliability and efficiency. Also in this part of the center, we can show visitors how customer engagement is improved by the smart grid. In a mock house, we demonstrate how common household devices such as a thermostat can be connected and controlled from a computer; this ability helps the customer track energy usage and maintain savings goals while helping the utility manage its demand load.

The COE is open and inviting all guests from large utilities to end users to the center for tours every day. For more information or to schedule a tour, please contact:

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Toward a smarter grid – the ABB concept

ABB workshops held for Oman Grid, local EPCs and consultants in Oman, March, 2012.

ABB's utility communications experts have been working in partnership with the Oman Electricity Transmission Company SAOC (OETC) and a number of other customers in the country for more than a decade now. Our close client relationships and our ability to provide world-leading technologies have enabled us to support the country's rapid economic development through the establishment of state-of-the-art telecommunications systems and numerous power installations in the region.

Workshops

Modern power systems are increasing in complexity and careful planning is needed to ensure that new installations will meet developing needs, while also making best use of existing infrastructure. With the advent of the smart grid and increasing levels of automation, ABB is receiving more and more requests for advice on how best to meet rising demand for electricity and expand existing infrastructure most effectively. To support our customers in the Middle East, we held a series of interactive workshops where customers could learn about the technologies available from ABB and about ABB's vision for a smart-

grid. The workshops also provided an opportunity for ABB experts to gain a clear understanding of the specific challenges faced by customers in the region.

The workshops were well attended. Each opened with an introduction to ABB's vision of the smart grid, including distribution technology and narrowband communications solutions. Ventix, ABB's enterprise software unit, and our substation automation experts also presented general introductions, explaining how our recently expanded portfolio can enhance operations with state-of-the-art power equipment and sophisticated software that enhances the performance of both operations and business processes.

To ensure that the needs of all participants were met, the workshop sessions were split into four programs, with each focusing on the needs of a particular group. In the OETC program, tailored for the Oman Electricity Transmission company, participants learned about new developments in fiber-optic networks and network telephony, substation automation and SCADA (supervisory control and data acquisition) systems from ABB's Ventix portfolio.

For EPC (engineering, procurement and construction) participants, the program included smart grid technologies, narrowband and broad band solutions, as well as substation automation and SCADA.

A similar series of sessions was arranged for the consultants, utilities and distribution workshop, with the addition of a session on communication for distribution networks and another on engineering and network planning.



Led by ABB experts, the sessions were well-attended.

The final set of specialist sessions catered to the needs of the Dhofar Power Company. As in the other sessions, there was ample opportunity for active discussions with the ABB experts.

Participants responded enthusiastically to the topics discussed – there is a close alignment between customers' needs and ABB's core competencies.

Key to success

At ABB, we are committed to providing complete solutions that meet the individual needs of our customers. Our close interactions at events like this help us to understand customers' needs and ensure that our solutions are sufficiently flexible to adapt as needs change. With solutions that make the best possible use of existing infrastructure, and are able to expand as demand for power rises, ABB is supporting development in many fast-growing economies around the world.

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Tailored sessions gave ample time for detailed discussions.

Power infrastructure to boost production at Rio Tinto in Australia

Substations to reinforce power distribution for expanded operations

In March this year, Rio Tinto placed a significant order with ABB for 17 distribution substations to support increased production at iron ore mines in Western Australia.

The upgrades and installation of new power infrastructure will raise the voltage level of the existing distribution substations and increase the power supply to support the expansion of existing iron ore mines in the Pilbara region.

Urbanization and economic development in emerging markets is fueling demand for steel, for which iron ore is the main component. Steel is widely used in the construction of bridges, railways, ships, cars, buildings, and other infrastructure.

ABB's scope of supply includes electrical switch rooms, switchgear, cables, power transformers and ring main units. ABB will also deliver a range of components including SCADA (supervisory control and data acquisition), and protection and communication equipment compliant with the IEC 61850 global standard. These substation automation technologies will enable remote monitoring and control of power assets located at multiple sites, from Rio Tinto's Remote Operations Centre situated in Perth, more than 1,000 kilometers away.

As part of the contracts, ABB is responsible for the design, engineering and supply of equipment needed for the upgrade and installation of new electrical infrastructure

for the substations. The projects are scheduled for completion by 2013 and form part of the customer's multi-stage Electrical Infrastructure Replacement (EIR) project. ABB has previously successfully completed several similar projects for Rio Tinto.

Rio Tinto is a global leader in the exploration, mining and processing of minerals and metals, including aluminum, copper, diamonds, energy products, gold, industrial minerals and iron ore.

ABB is the world's leading supplier of turnkey air-insulated, gas-insulated and hybrid substations with voltage levels up to 1,100 kV. These substations facilitate the efficient and reliable transmission and distribution of electricity with minimum environmental impact, serving utility, industry and commercial customers as well as sectors like railways, urban transportation and renewables.

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Rio Tinto has extensive mining operations in Western Australia and chose ABB to design, engineer and supply the equipment needed to upgrade its electrical infrastructure.

SafeLink Automation with RTU560

With a steadily increasing trend in “Smart Grid/Smart Network” methodology and a continuing emphasis on the reduction of network outage times, power utilities are investing heavily in automation systems in order to improve the efficiency, reliability, economics, and sustainability of electricity services.

In response to the emerging trends in network automation, ABB has developed a comprehensive automation package to complement ABB's compact SafeLink range of RMU (ring main unit) switchgear. The system was developed with input from key customers in New Zealand and Australia. Engaging lead users and suppliers from the onset in the development process allowed the product to meet customers' needs as well as building trust in a new product.

SafeLink Automation provides switch position indication and remote operation of the RMU. Power monitoring is also possible using an advanced fault passage indicator, which connects with the RTU over a MODBUS link, providing real-time voltage and current levels, earth and phase fault levels and fault direction.

A plug-and-play design philosophy was maintained allowing the automation system to be easily retrofitted into existing SafeLink Switchgear. This provides a unique advantage over several similar systems as SafeLink Automation has been specifically designed for use with SafeLink Switchgear and does not have to be built out of kitset components or re-configured for each different type of RMU.

The new system uses the RTU560 CMG10 to control the RMU and communicate with customers' SCADA systems using mesh radio and GPRS. The engineered system was required to have high performance and also to remain flexible enough to meet the needs of a wide range of end users. Working closely with the RTU team

in Mannheim, Germany, the ABB PPMV team in Auckland, New Zealand, were able to bring the product to the market quickly and efficiently.

One of ABB New Zealand's key customers, Unison Networks Ltd, is in the process of transforming its distribution network into a smart grid. “Distributed micro-generation, self healing networks, communications-enabled assets and dynamic ratings, all form part of Unison's Smart Grid vision”¹.

An initial installation of 40 SafeLink automated units began earlier this year at Unison. The majority of these units will be deployed in Taupo - a popular holiday destination in the centre of New Zealand's North Island - where Unison is planning to establish a self-healing network.

Grant Hogan, Unison Networks Smart Network Manager explains “One of the key components when considering network automation options was the availability of a cost effective, automated, ground mounted RMU. The SafeLink product had previously been selected as the standard switch for Unison's network, it was logical to pursue the option of an automated version. This enables standardization of equipment and interchangeability with non-automated SafeLinks, together providing familiarity for field crews in terms of installation and operation”.

Unison worked collaboratively with ABB in aspects of the automated switch development and believes the features and functionality of the product will aid considerably in the establishment of its smart grid



SafeLink Automation will improve grid reliability and optimize fault response at Unison Networks

- not only from an automation perspective, but also through the availability of real-time voltage, current and fault data.

As part of its ongoing smart grid roll-out, automated SafeLink units will be strategically installed to facilitate automation schemes. This will enable Unison to realize benefits associated with a smart grid, including improvements in reliability, power quality and the optimization of fault response.

Numerous projects involving the deployment of automated SafeLinks are planned over the next four years.

A large amount of interest has also been expressed by several other utilities with multiple SafeLink Automation Systems planned for customer trialing this year.

1. Unison Networks Limited, Asset Management Plan 2011-21

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Ventyx completes integration of Mincom; goes to market as “Ventyx, an ABB Company”

Combined organization to lead industrial enterprise software market

By merging the complementary, market-leading technologies of each organization, Ventyx has cemented its position as the leading provider of Industrial Enterprise Software for global companies within asset-intensive industries such as energy, mining and public infrastructure.

“Having fully integrated the Mincom organization, we are now proud to introduce the combined organization as Ventyx. Going forward we are strongly positioned to lead the Industrial Enterprise Software market, which will be mission-critical for essential industries in achieving real-time communication and enterprise-wide system management to enhance reliability, efficiency and productivity,” said Jens Birgersson, CEO of Ventyx. “The powerful capabilities brought together in the new Ventyx portfolio will help our customers to effectively address strategic initiatives such as the smart grid, e-mobility, mining and logistics, and new legislation around safety and cyber security.”

Reflecting the successful integration of these businesses, Ventyx today introduced its new brand identity – including a new logo and Web site at www.ventyx.com. Bringing together all Ventyx solutions, services and expertise under one banner will deliver a number of advantages for customers:



Bringing Ventyx and Mincom together delivers real benefits to customers.

- A broader breadth and depth of solutions and services.
- An expanded global footprint, with increased presence in all major markets worldwide.
- Comprehensive solutions addressing the full range of core asset-intensive industries.
- A better model of enterprise business solutions, one that takes a whole-systems approach to enterprise asset health.
- Increased integration between information technologies (IT) and operational technologies (OT).

“The Ventyx organization combines more than 120 years of collective experience in delivering enterprise solutions to asset-intensive organizations, and a combined portfolio offering an unparalleled range of innovative solutions for our customers,” said Birgersson. “Having completed the organizational integration of Mincom, Ventyx moves forward this year as a unified, cohesive operation across all key functions worldwide – including sales, customer support, R&D, product management and managed services.”

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