ABB technology to facilitate integration of Albanian network into European grid

As part of a recent order, ABB will be setting up a dispatch and tele-control center, under the leadership of the Italian team. The project is part of an initiative financed by the Italian Cooperation.

The project is aimed at enhancing the reliability of the Albanian grid in order to allow its integration into the European grid. As part of its scope, ABB will supply the SCADA / Energy Management System (EMS) system, based on ABB’s Network Manager platform, and a communication grid comprising 450 km of fiber optic.

Italy’s, Minister of Industry, Mr. Claudio Scajola Tirana who was chief guest at a special launch ceremony, commended ABB’s role in the development of the Albanian electricity infrastructure. Several other senior government officials from Albania and Italy, including the Albanian Vice Prime Minister and Energy & Industry Minister were also at the ceremony.

“Besides enhancing the infrastructure for a safer and more reliable control over the Albanian electrical grid, our project’s goal is to allow the integration of Albania into the European grid, thus laying the foundations for free trade. This will allow the integration of Albania at a UCTE level, also facilitating the energy exchange with Eastern Europe, but above all making Albania a crucial knot of the continental grid” summarized Giovanni Battista Ferrari, Local Division Manager Power Systems Italy.

Guests attending the ceremony
ABB wins a €3.3M project for the delivery of two multi-utility DMS control systems

ABB has won the order for the delivery of two multi-utility DMS systems, each with an emergency backup system, for the control of the electrical, gas, water, and district heating networks of Bochum and Dortmund – two of Germany’s largest municipal utilities.

ABB's Network Manager came out on top against well-known network control competitors in the DMS multi-utilities market.

„With this order, we have proven that Network Manager belongs to the first class of multi-utility DMS systems“ said Dr. Bardolf Engel, ABB project manager.

This success marks the first time on the German electricity market that a project has been buying cooperation funded for two independent network control projects.

Both projects will define the future functional standard in this market segment, particularly in the outage management, gas, and district heating simulation/optimization and load management areas.

Both projects are scheduled for completion in 2011.
UNION FENOSA in Spain selects ABB NSD570 and ABB ETL600

UNION FENOSA is an integrated electricity and gas energy operator.

In Spain, its installed capacity of energy generation is approximately 9,000 MW, and it owns over 100,000 km of electricity distribution and transmission grids, which are mainly in the center and northwest of the country. Their market area is larger than 80,000 km², primarily in four autonomous regions: Galicia, Madrid, Castile – La Mancha, and Castile and Leon.

From 2006 to 2008, UNION FENOSA installed more than 100 NSD570 racks within its communication network for tele-protection applications. Furthermore, UNION FENOSA awarded ABB an extension of the existing agreement for tele-protection equipment in November 2008 until the end of 2009.

After having passed UNION FENOSA’s equipment certification process for ETL600 last May, ABB has already delivered the first 30 terminals to cover their power line carrier technology needs.

UNION FENOSA chose NSD570 and ETL600 because both devices fulfill the technical requirements of high quality, security, and reliability for tele-protection and power line communication. Moreover, UNION FENOSA places a lot of value on the good service and positive experience provided by ABB in the past, and looks forward to continued cooperation in the future.
ABB’s Network Management solution to modernize São Paulo subway

ABB will execute a project for Alstom Transport, to provide a high-availability telecommunications network for three lines of the São Paulo subway, which are being upgraded and expanded. The extensive subway network covers 61 stations and 61.3 km of lines. It transports more than 3 million passengers a day across one of the busiest cities in the region. The solution will incorporate state-of-the-art optical transmission technology and Ethernet for voice, data, video surveillance and railway signaling. The technology will increase system availability and reliability by providing for a high data transmission rate and at the same time ensuring accuracy and safety for train operation and commuters.

“The key objective of deploying this system is to increase reliability and transport capacity by reducing intervals between trains. Once implemented, it will benefit millions of subway users in the busy metropolis of Sao Paulo”, says Jens Birgersson, global Business Unit Manager for Network Management.

The system includes 126 units of the newly released FOX515H, and 412 units of ESP630—Ethernet Switches, which provide 99.9998% system availability as they are all integrated to operate in a duplicated network, providing redundancy and being fully managed by the FOXView Platform. The optical communication network will provide for a large initial data transmission capacity at 2 x 2.5 Gb/s, ensuring broadband for the traffic operation and corporate services that are especially required for transport networks. Developed in Switzerland, the FOX technology is boosting ABB’s installed base of private high-availability telecommunications networks in the railway market.
ABB supplies telecommunication system to ENEE of Honduras

ENEE was created in 1957 as an autonomous organization responsible for the production, transmission, distribution and commercialization of electrical energy in Honduras. During the creation of ENEE, the first large project (HPP Cañaveral) was initiated. After that, several other projects including new power plants and transmission lines took place, thereby creating the so-called National Interconnected System which continued to expand and now covers most main regions throughout the country. Currently, ENEE covers 70% of the electricity demand in Honduras, employs more than 2,500 people, and serves 1.4 million households and 1 million commercial customers.

The Honduran system has an installed capacity of 1.4 GW, out of which 34% is generated by hydropower plants, 62% by thermal plants, and 4% by biomass power plants. In total, approximately 60% of the energy is generated by private generators.

Currently, ENEE has an urgent need to modernize its National Interconnected System and Power Dispatch Centre to promote rural electrification and to reduce energy losses. To do so, the company is planning to replace the existing telecommunication system to improve operation coordination, system reliability and safety (to reduce blackouts), management of ENEE transactions with private generators, and facilitation of interactions with the Regional Operations Centres and the electric regional market. The investment is financed and supervised by the Inter-American Development Bank (IDB) part of the contract between the bank and the Honduran government (reference ‘IDB N. 1584/SF-HO’).

This telecommunications project will strengthen the transmission system and substations that support rural electricity. Such an investment will improve service quality and reliability in rural areas of Honduras and the technical conditions for future expansions of the grid.

Currently, ENEE has chosen the SADEMEX-SADEVEN-ABB Switzerland consortium to supply and install a new communications network. The contract was signed in early January 2009 for a total of 8.8M USD. The project shall be finalized within 18 months and consists of the supply and installation of:

- 400 km of OPGW/ADSS cables
- 37 x FOX515 optical multiplexers (SDH STM-4/8 Mbps) and its corresponding Network Management System (NMS)
- 28 x ETL600 power line carriers, including coupling filters, line traps, and coupling capacitors
- 2 x SOPHO PABX.

ABB Switzerland will supply the terminal equipment (FOX, ETL and SOPHO), system commissioning, and the corresponding training for a total amount of 4.5 MUSD. The other consortium members (SADEMEX and SADEVEN) will supply and install the OPGW/ADSS cables.
Brookfield Renewable Power selects ABB Network Manager™ to manage multi-site generation

ABB has received an order for its ABB Network Manager™ SCADA from Brookfield Renewable Power Inc. of Gatineau, Quebec. The ABB solution provides increased operational flexibility, reliability and security.

The integrated system will be a multi-tier, hierarchical system consisting of a National System Control Center (NSCC) in Canada, a National System Control Center in the U.S., and three regional SCADA systems in both Canada and the U.S. Full redundancy will be provided between the NSCCs and the regional SCADA systems such that the regional SCADA systems will serve as a NSCC backup center for their specific region. Operation can be from the NSCC or from the regional SCADA. In addition, the NSCCs will exchange data through an ICCP (Inter-Control Center Communications Protocol) link.

“ABB provides the complete solution that we are seeking, along with the proven experience needed to implement it successfully,” said Viggo Lundhild, Vice President, U.S. National System Control Center, Brookfield Renewable Power. “The Network Manager technology and architecture will provide us with the redundancy, flexibility and expansion capabilities that our operations require, as well as helping us meet NERC CIP requirements. With this project, our operators will have better situational awareness and can do their job more efficiently. We are looking forward to teaming with ABB on this strategic project.”

The Network Manager SCADA system implementation will provide Brookfield Renewable Power with many benefits, including:

- Consolidated remote operations in a single location for each country
- Improved reliability using advanced system architecture
- Enhanced situational awareness and security
- Efficient management of generating assets via new control centers
- A flexible platform to support projected growth.

“We are excited about the opportunity to work with Brookfield Renewable Power on this important initiative,” said Salim Khan, head of ABB’s Network Management business unit in North America. “Brookfield Renewable Power and ABB share an interest in meeting growing energy demand in a sustainable way that minimizes environmental impact. ABB has a proven track record in providing advanced Network Management systems such as SCADA, EMS, and DMS, that enable the smart grid. We are very pleased to provide a system that will provide present and future business benefits for Brookfield Renewable Power.”

Brookfield Renewable Power Inc., wholly-owned by Brookfield Asset Management Inc., has more than 100 years of experience as an owner, operator, and developer of hydroelectric power facilities. Its total portfolio includes more than 160 generating facilities with approximately 4,000 megawatts of capacity. It also has a significant hydroelectric and wind project pipelines. Brookfield Renewable Power’s operations are primarily located in North America and Brazil.
DistribuTECH 2009: A successful showing of ABB Network Management

The 2009 DistribuTECH Conference was held in beautiful San Diego, California (USA) on February 3 – 5, 2009. DistribuTECH is one of the premier T&D events in the US and features exhibitions and conference sessions centered on electric distribution technologies.

Many of the participants attending the conference were focused on timely subjects such as Smart Grid implementations, Advanced Metering Infrastructure (AMI), Distribution Management Systems (DMS), systems integration, cyber security, and the US Stimulus Bill.

ABB Network Management had high visibility at the event, including the ABB exhibit and participation in the conference sessions. ABB Network Management teamed with other business units in ABB, including those responsible for substation automation, distribution feeder automation, and medium-voltage power technologies, to showcase the latest technology solutions for distribution companies.

ABB exhibited a new “Smart Grid” demo, integrating Network Manager DMS, ABB substation automation gateway COM600, and ABB feeder IED’s including the REF 615. The demo illustrated the benefits of integrating DMS with substation automation and feeder automation, particularly for intelligent fault detection and restoration activities.

At DistribuTECH, ABB Network Management demonstrated its capabilities and advanced applications in SCADA and DMS

In one DistribuTECH conference session, Khosrow Moslehi of ABB Network Management in the US presented “An Outage Scheduling System for Modern Deregulated Electricity Operations Centers”.

The presentation described a state-of-the-art transmission and resource outage coordination system specifically designed to meet the challenges presented by a modern utility operations environment. The presentation included high-level system design and features to address stakeholder requirements; system architecture emphasizing security, reliability, and scalability; and a commercial rules engine that is utilized to implement thousands of business rules and provide flexibility in maintenance and expansion of the rules. Integration issues were discussed, particularly interfaces with other enterprise systems such as the EMS, Registration, and Market Management System.

ABB’s leadership in cyber security was evident, as it led two panel sessions on cyber security. One session entitled “Advancing SCADA/EMS System Cyber Security Through Collaboration Between Utilities, Suppliers, INL and DOE NSTB” was moderated by ABB’s Phil Beekman. The session’s topic was very timely, and participants included ABB Network Management users and others.

ABB’s proven track record of industry vision and technology development, focused customer service, and reliable system deliveries continues to be an important factor for ABB customers. Much positive feedback was received from attendees at DistribuTECH.
Progress Energy Carolinas (PEC), headquartered in Raleigh, NC (USA), is an electric utility operating company serving approximately 1.4 million customers. It has been a long user of ABB Network Manager™ DMS, and has had the DMS Fault Location application, a real-time fault location system, in operation at their Raleigh Distribution Control Center since 2002. The Fault Location application has helped reduce outage repair time by reducing the time it takes to field crews to locate faults. The system combines real-time fault current measurements with a fault location system in Network Manager DMS to accurately compute the possible locations of a fault on a circuit.

Locating faults on distribution lines has historically involved information from a variety of sources including customers, 911 emergency calls, and outage predictions from the distribution management system. Sometimes this information leads directly to the faulted line location. Often, however, the fault location must be found by a time-consuming process of patrolling and inspecting the lines of a faulted circuit.

How the Fault Location Application Works
Progress Energy has a Feeder Monitoring System (FMS) to automatically record fault current information. Whenever a feeder lock-out occurs, the centrally located FMS automatically calls the substation RTU. In some cases, fault information is obtained from automatic reclosers after the reclosers have tripped. Pre-fault and fault current samples are downloaded by the FMS, and fault current magnitude, fault type, and faulted phases are calculated from the current samples. This information is automatically input to Network Manager DMS through an ASCII SCADA interface. The fault location system in the OMS is then automatically triggered and receives fault current magnitude and phase measurements in real time.

The core processing of the Network Manager DMS Fault Location application comprises a short circuit analysis run on the faulted circuit to compute the available short circuit current at each node on the circuit. Nodes are points where wires make electrical connections to poles, bus work, or other equipment, and represent the locations where fault current is computed. The program computes the possible line segments that could produce the measured fault current under fault conditions. A given line is a possible fault location if the measured fault current is numerically between the short circuit fault current available at each end of the line. The program interpolates the location of the fault along the line based on the actual current measurement and fault current calculated at each line end node. The result is a more specific estimate of the fault location that can then be passed on to field crews.

Since the Fault Location application is integrated in Network Manager DMS, the model assures accurate and efficient processing of fault locations and provides for results to be presented directly to distribution network operators on their native graphical network maps. Per-phase circuit models coupled with the actual operational status of devices and actual wire size and material for impedance calculations allow fault location to be computed with a high degree of accuracy.
Based on the system's calculations, the operator is presented with a tabular list of lines, also highlighted on a graphical map, where the fault could be located. The operator then communicates the possible fault location to field crews that are dispatched to restore the resulting outage.

Results
The average Progress Energy feeder length in the Carolinas is 43 miles, and the fault locations are often computed within 0.25 mile of the actual location. Because of the consistent accuracy of the results, PEC operators and field crews have realized the value of the application and the outage time that can be saved.

As a result, PEC has adopted a “switch-before-fix” mentality with the aid of the fault location information displayed on the screen. The dispatcher can provide switching locations to isolate the fault once the faulted area has been validated by the service technician. Using distribution SCADA, the dispatcher can then restore, or close, the distribution breaker remotely, greatly reducing the customer minutes associated with an outage.

The reliability improvement results have been substantial. They are measured in terms of the reduction in System Average Interruption Duration Index (SAIDI), or average customer-minutes of outage time. PEC estimated that the initial reduction of SAIDI was 20 minutes per year. Such benefits are the result of combining an as-operated distribution network model, with operating information from the distribution network.