Dear friends,

Power systems are becoming more intelligent by the day as they leverage information technology and communications to provide real-time information for better optimization. Control, integration, protection & monitoring systems are also helping to enhance grid reliability. Modern IT based technologies can help ensure optimum production and delivery as well as, improve the quality of power and facilitate better communication and balance between supplier and consumer needs.

Complete solutions for power plant automation, controls, instrumentation, optimization & electrics, SCADA (Supervisory Control And Data Acquisition), WAMS (Wide Area Monitoring Systems) and other Distribution Management Systems are enabling effective monitoring and control of geographically dispersed grid elements and substations from remote central locations.

A transformed electricity system will also enable a substantial increase in productivity, improve energy efficiency and resource utilization and generate substantial additional wealth to meet the growing societal and environmental needs of the twenty-first century.

Going forward, we are clearly looking at smarter power systems. A grid that is always ‘on’, interconnected and interactive in a complex network of real-time information and power exchange. A grid that can constantly monitor and correct itself to attain the highest quality standards. A system that can sense disturbances and instantaneously reconfigure the flow of power to cordon off damage before it can spread. A grid with the ability to combine centralised power generation seamlessly with an array of locally installed, distributed power sources and integrated with the transmission and distribution grid, going all the way to the consumption point.

In this issue of CONTACT, we focus on Network Management and bring you some of the latest trends and technologies in this space. We hope you enjoy reading through it. I also take this opportunity to thank you all for your support through 2007 and wish you the very best for a happy & rewarding 2008!

Yours sincerely,

Biplab Majumder
Country Manager & Managing Director, ABB India
Global Roundup

ABB to supply world’s largest railway power converter system

ABB will supply an advanced railway power converter system for a power station under construction in Datteln, Germany. ABB will provide the 400-megawatt (MW) system for E.ON Kraftwerke GmbH for its new 1100 MW coal-fired power station that will supply electricity to German railways. On completion, it will be the largest power converter system of this type ever built. The system will change the frequency of electricity produced by E.ON power plant to the lower frequency used by rail systems in central Europe.

ABB supplies largest industrial substation in Brazil

ABB recently commissioned one of the largest industrial substations in the world to help increase the energy capacity of Companhia Brasileira de Aluminio (CBA) - the world’s largest integrated aluminum plant. The project is a benchmark in terms of design optimization and enabling bulk power over a long distance. ABB’s scope in the project included a 440/230 kV - 2x375 MVA main substation, 230 kV interconnection substation, 230 kV switching substation and 440 kV & 230 kV transmission lines.

ABB to build world’s longest UHVDC power link in China

ABB has won orders from the State Grid Corporation of China to provide new ultra high-voltage technology for the world’s longest power transmission link. The power superhighway running 2,000 kilometers (1,240 miles) from western China to the highly industrialized coastal area in the east, will have a capacity of 6,400 megawatts (MW) - enough to meet the needs of about 31 million people in China. The link from the Xiangjiaba hydropower plant to Shanghai is scheduled for completion in 2011. The Ultra High Voltage Direct Current (UHVDC) link comprises two substations and a power transmission system using breakthrough technology to transmit electricity at ultra high voltage (800 kilovolts), which will minimize the amount of power lost in transmission.

This project represents a number of breakthroughs in electrical power transmission:
- The 6,400 MW power rating is more than double of the most powerful rating in operation today
- At 2,000 km, the transmission line will be the longest in the world
- Transmission losses will be less than 7 percent, significantly less than the losses from conventional 500-kilovolt (kV) High Voltage Direct Current (HVDC) transmission schemes.

The savings from using UHVDC compared with HVDC are equivalent to the annual power consumption of more than 900,000 people in China.

ABB solutions power world’s longest subsea pipeline

Located at depths of 800 to 1,100 meters in the extreme weather conditions of the Norwegian continental shelf, Ormen Lange is the deepest natural gas field ever exploited. This gas field will supply 20 per cent of United Kingdom’s gas needs via a 1,200 kms pipeline - the longest underwater pipeline in the world. Equipped with a cutting-edge ABB automation, electrification and telecommunications solution, the project will supply 70 million cubic meters of gas and 50,000 barrels of condensate a day and provide UK with stable and reliable supply of natural gas for the next 40 years.

Three Gorges HVDC project wins Asian Power Award 2007

The Three Gorges - Shanghai 500kV HVDC Transmission Project executed by ABB has been awarded the Asian Power Award, “Asian T&D Project of the year”. The project was selected from over 40 power projects globally including those in India, Philippines, Korea, and the USA. Projects are judged on the basis that they supply clean energy, demonstrate high efficiency and are environment friendly. The project was a benchmark in terms of optimized design and stringent control, enabling the bulk power long distance systems to be delivered with a short delivery time. Also key to the success of the project were factors such as zero accidents, high quality, advanced technology and use of localized engineering.
Ensuring grid reliability in Venezuela

ABB will provide two turnkey 800 kV substations that will strengthen and stabilize the power grid in Venezuela to help meet the country’s booming demand for electricity. The substations are part of a new extension to Venezuela’s 800 kV transmission grids that deliver power from the 10,000 MW Guri hydropower plant. Guri is the world’s second largest hydropower plant, and generates power for Venezuela’s 800 kV transmission systems. ABB is currently upgrading the control, protection and instrumentation systems of the 20 generating units, and is modernizing part of the 230/400/800 kV switchgear in the plant’s three high-voltage switchyards.

London Underground banks on ABB for power management solution

London Underground’s power supply system is now controlled by an integrated SCADA system based on ABB’s Network Manager solution. The London Underground comprises some 250 miles of track, with 12 lines and 275 stations serving around one billion passenger journeys each year. LU’s power supply system is kept under continuous control by engineers and operators responsible for the safe and reliable operation of a 22kV sub-transmission system with load delivered via an 11kV system to 158 delivery points. Control of the network is now centralized in two replicated command centres, with dual application servers interconnected by a high-speed fibre-optic communications link. The Network Manager system has proved its capability to ensure a high level of power availability to meet London Underground’s stringent operating targets.

ABB helps improve productivity and energy efficiency at Hydro Aluminium

ABB has contributed to impressive improvements in productivity and energy efficiency at the largest and most modern aluminium refinery in Europe. Hydro Aluminium placed an order on ABB to modernize its Sunndal refinery which produces 360,000 metric tons of primary aluminium per annum. Comprehensive power and automation solutions supplied by ABB helped Hydro Aluminium improve plant productivity by 15 per cent and increase energy efficiency by 25 per cent. ABB’s scope of supply included process-enabling technologies like rectifiers and process control systems, harmonic filter banks, integrated switchgear modules, and low voltage and DC voltage distribution systems.

ArcelorMittal Steel Rolling mill in Poland to be modernized by ABB

ABB has received an order to modernize a Polish cold rolling mill of the Arcelor Mittal Group, the world’s largest steel producer. Scope of the order includes complete modernization of the mechanical and electrical components. ABB will also supply a new Level 1 automation system, including the Technological Control Systems, based on the state-of-the-art process control platform, System 800xA. Other products & systems in the scope of supply include new AC drives, welding transformer, motor control centers, DC supply units as well as engineering services & project management.

Power & automation technologies for onshore oil field

ABB has won a contract from Eni SpA to design and construct a new oil processing plant in an onshore oil field in Italy. The plant will process almost 7,000 barrels of crude oil and 6.7 million cubic feet of gas per day. It is part of the larger onshore oil field development project, which includes a sulphur treatment plant, wellhead facilities and a power generation plant. ABB will provide engineering, design, commissioning, construction and startup services, as well as overall project management supervision. In addition, ABB will provide automation systems including a System 800xA distributed control package, emergency shutdown and fire and gas systems for the whole project, as well as the electrical system for a new power station.
Candy company delights in robots’ sweet success

The New England Confectionery Company (NECCO®) is the oldest multi-line candy company in the United States. It is best known for its Sweethearts® Valentine Conversation Hearts - producing an estimated eight billion every year. NECCO needed to streamline the process for boxing the candy hearts, which was time-consuming and labor-intensive. It installed two ABB IRB340 SA FlexPicker Robots to make carton filling and packaging a continuous process. Since the robots have been in operation, NECCO has reported significant increase in production and reduction in labor costs. ABB robots have increased throughput, reduced costs and automated the entire process.

ABB’s robots enable flexible production

Based near Lisbon, Farame has been in business since 1983. Its main products include handling and storage trolleys for letters and parcels in post office distribution centers and for components in automobile plants, as well as supermarket carts and related products. The company uses ABB robots, positioners and welding cells in its production line, which involves cutting, bending and welding steel wires, rods and tubes into products that are then zinc-coated and painted. Each robot can be quickly adapted to a new or different product which gives Farame more time and manpower to develop new products. The ABB robotics solution has helped the company develop innovative products and lean manufacturing processes.

Coffee - courtesy robots

Löfbergs Lila is Sweden’s second biggest coffee manufacturer. Its business is distribution-intensive where 16,700 tons of coffee per year are packed varying in weight from 50 grams to six kilograms. To aid in the process, Löfbergs Lila uses four ABB robots. Two of the robots (IRB 640) have articulated arms and move in a very human fashion. Their function is to automatically take cardboard boxes from the end of the line and feed them onto a euro-pallet until the pallet is full and ready for shipment. The robots have increased the plant’s flexibility in palletizing different types of boxes. They have also drastically decreased the incidence of work-related injuries in the company.

Getting rid of aches and pains

Nexium, AstraZeneca’s blockbuster treatment for dyspepsia, peptic ulcers and various other gastric-acid related disorders, brings big business. While the millions of Nexium tablets that are sold bring relief to the ailing stomachs of the world, packaging the tablets for the marketplace brings its fair share of headaches. There are dozens of combinations of blister packs, wallets and shipper cases. The company’s plant in Sweden features four dedicated Nexium lines supplied with turnkey ABB robotic pack-handling solutions. Robotization of the end-of-line packaging systems for Nexium has enabled AstraZeneca to maintain high production rates while accommodating flexible and varied product packaging requirements.

Robots take the heat

It’s hard to find a factory employee willing to operate a hot press for any length of time. The heat, stress and noise of the job take their toll, giving rise to quality-control issues as well as spelling danger for the worker. Robots are therefore an increasingly attractive alternative in foundries, especially when the volume of work is large. MP Filtri of Pessano con Boragno, Italy, one of the world’s leading manufacturers of hydraulic oil filters, faced the challenge of surging orders. So they decided to turn to ABB robots. Now, in addition to increased productivity, the company has less waste, more consistency, fewer errors, better quality control and more uniform production—not to mention willing workers!
ABB strengthens India commitment

"India is among the fastest growing economies in the world today and a key focus area for ABB. It is an important part of our growth strategy and will play an integral role in strengthening ABB’s global footprint", said Hubertus von Grünberg, Chairman ABB Group.

"We are extremely encouraged with the performance of our Indian operations and India will soon be among the top five markets for ABB. Based on market outlook and our well established presence here, we expect the business volumes for ABB in India to double by 2010," said Fred Kindle, President & CEO ABB Group.

Major expansion plans announced include a new greenfield facility at Nelamangala, near Bangalore for manufacturing Low Voltage products and Power Electronics. The company is also establishing new manufacturing units in Vadodara for Small Power Transformers and Distribution Automation products. Meanwhile, capacity and range expansion is underway across businesses and locations. For instance, ABB will double its production capacity for High Voltage (HV) breakers, instrument transformers and High Tension (HT) machines as well as expand the capacity of large power transformers to 17000 MVA. ABB will also manufacture 765 kV equipment in India, to support the country’s power infrastructure needs.

In an interaction with over 45 channel partners from all over India, Dr. Grunberg and Fred Kindle thanked them for facilitating the strong growth of ABB’s standard products business. The Board of Directors also interacted with the crème-de-la-crème of Indian industry and met many of the company’s customers at separate events in Bangalore and New Delhi.

As part of the visit, the Board of Directors visited ABB’s Global Corporate Research Center as well as its manufacturing facilities in Bangalore and Vadodara. In Vadodara, they also inaugurated a new global factory for Distribution Automation.
New Distribution Automation factory inaugurated in Vadodara

A state-of-the-art unit for manufacturing a complete range of distribution relays including static, numerical and electro-mechanical was recently inaugurated at ABB’s power technology hub in Vadodara. The factory will serve as a global sourcing base for the new Cougar series of relays which will cater to secondary distribution markets globally.

ABB in India continues to win accolades!

ABB was selected as the Best Value Creator at the recently held Outlook Money - NDTV Profit Awards 2007. ABB won this award amidst strong competition across the industry spectrum, beating many IT and FMCG companies. Ernst & Young was the validation agency. The awards ceremony was held at Mumbai and Jairam Ramesh - Minister of State for Commerce & Industry handed over the award which was received on behalf of the company by K. Rajagopal - Chief Financial Officer, ABB India and SAS Region. The award was in recognition of ABB India’s stellar business performance and strong growth in market capitalization which has risen from less than 200 MUSD in 2001 to 8 BUSD levels.

In other recently published surveys conducted by leading Indian business magazines, ABB India ranked 30th among the private companies in Business Today’s survey of 500 most valuable best companies in India and shortlisted among the rising stars. The company also ranked among Business India’s Super 100.

Partnering PowerGrid in the quest for operational excellence

ABB’s ongoing quality improvement initiatives received a boost when its manufacturing unit at Andheri, Mumbai achieved a milestone by significantly reducing final inspections of utility communication equipment by Power Grid Corporation of India Limited (PGCIL) through the Green Channel approach. PGCIL initiated the Green Channel project in 2006 for its large and reliable vendors. The project aims to attain operational excellence through improved supply chain efficiencies and reduced cycle times.

Based on approvals of QAPs (Quality Assurance Plans) submitted by Mumbai Works for communication equipment - PLCCs and MCD80s - final inspections have been reduced to 10 percent from 100 percent. ABB is the first company to have accomplished this milestone. Other ABB units participating in this initiative include Substation Automation and Transmission Relays which have also made significant progress with inspection levels down to 25 percent.
ABB's Outdoor RMUs to facilitate quality power in Kolkata

ABB will help secure Kolkata’s energy requirements with its 280 Outdoor Ring Main Unit (RMU) supplies to CESC (erstwhile Calcutta Electricity Supply Corporation) for the city’s electricity distribution. CESC currently has 1400 HT consumers, with 1000 Units of 6 kV/11 feeders, and 2.2 million LT consumers. ABB RMUs will reduce the restoration time of 11 kV feeders in HT Feeders. Installation of ABB RMUs will help CESC cut down fault restoration time by 50 percent.

New testing lab for capacitors

ABB has set up a new test lab capacitors at its manufacturing unit in Bangalore. The facility will be used for testing capacitors up to 22kV. It will cater to requirements for 22kV capacitor units from large HVDC projects. The test lab will also enable testing of capacitance and tan delta measurement as well as AC tests (up to 50kV) for capacitor units up to 22kV as specified by IEC 60871-1/IEEE 19/IS 13925.

ABB bags ‘best stall’ award at Paperex 2007

ABB won the “Best Stall” award at PAPEREX 2007 - an international trade fair and conference held in New Delhi recently. ABB showcased its offering for the pulp & paper industry at the event which focused on newsprint manufacturing, consulting, engineering and designing, development and installation of processes for the paper industry. ABB used this platform to launch its new range of quality control systems and network platforms along with products and services in the process automation segment for the pulp & paper industry.

ABB showcases energy efficient technologies at Energy Expo 2007

ABB participated in Energy Expo 2007 organized by CII (Confederation of Indian Industries) in Ahmedabad. The exhibition provided an ideal setting to showcase ABB’s power and automation offerings that help utilities and industries enhance energy efficiency & improve productivity. ABB showcased some of its latest offerings in the Indian market including Surge Arrestors with silicone rubber housing and Vacuum Interrupters. Other displays included automation products like Variable Frequency Drives, Motors, LV Switchgear, PLCs, HMI and high voltage equipment like Double Break Disconnector, Current Transformer with polymer insulator and ABB’s latest hybrid switchgear PASS. Distribution transformers, turbochargers and MV indoor switchgear module for channel partners were also showcased.
### ABB makes it big at INMEX India 2007

ABB participated in the fifth edition of INMEX India 2007 - The Indian Maritime Exhibition and Forum, a three day exhibition cum conference, held at Mumbai. INMEX is an international exhibition on ship-building, marine equipment, dredging, ports and ports technology, ocean engineering and marine offshore technology. S.M. Krishna, Governor of Maharashtra, inaugurated the exhibition. This exhibition provided an ideal setting for ABB to interact with customers and key decision makers. ABB showcased its latest offerings for the maritime industry - the highlight being the TPL-61 cartridge.

### ABB participates in Ace Tech 2007

ABB participated in Ace Tech 2007 - the international exhibition and symposium on architecture, construction and engineering in Mumbai. The forum provided an ideal setting to showcase ABB’s integrated building solutions offering such as HVAC drives, lightning and surge protection devices, motors, distribution boards, switchgear, Electric Wiring Accessories, Compact Substation and Ring Main Unit.

### ABB showcases pharma offerings

ABB participated at PMEC India 2007 - South Asia’s leading event for the pharmaceutical machinery & equipment industry held in Mumbai. P-MEC provided a platform for Indian as well as global companies to showcase their products and technology for the pharmaceutical industry. From live displays of Programmable Logic Controllers (PLC) to drives, low voltage switchgear and controlgear, ABB displayed an array of products and systems catering to the automation of the pharmaceutical and chemical industry.

### ABB participates in BangaloreIT.in 2007

ABB participated in BangaloreIT.in 2007, Asia’s biggest IT and telecom event. ABB demonstrated a complete portfolio of products, systems and solutions for utility and industry customers. Recent range expansions in low-voltage products, transformers, high-voltage machines, frequency converters, control product components and industrial robots were also showcased at the exhibition. ABB’s Global Corporate Research Center in India - the largest in ABB Group - also displayed its R&D capabilities at the exhibition.

### Seminar on trends in Low Voltage Switchgear technology

ABB recently conducted a seminar on "Trends in Low Voltage Switchgear Technology" at New Delhi. Some key points discussed at the seminar included reduced down time, better safety standards, clean environment & low maintenance cost for the panels. It was organized in association with COSMA (Control Panel and Switchgear Manufacturer’s Association) - the industry’s apex body that works for the mutual benefit and progress in technical and commercial fields for all stakeholders.
New improved HV EDF circuit breaker

With the objective of enhancing performance and reliability under severe and special operating conditions, defined as per the latest standards, the high voltage Live Tank Circuit Breaker (LTB) type EDF has been equipped with a number of technology upgrades. First developed in 1986, the breaker has been a front-runner in ABB’s family of high voltage circuit breakers for the last two decades. The Global Focused Feeder Factory (GFFF) for this product is situated at Vadodara - ABB’s hub for HV products and the global feeder factory in India.

In keeping with the new IEC standards and market requirements for special applications, ABB’s Research Centre at Vadodara upgraded the product with the following features:

- Qualified for severe S2 duty under IEC 62271-100 for overhead transmission lines. With higher values of TRV (Transient Recovery Voltage) in the range of 146 kV instead of 137kV the breaker can interrupt faults of greater severity.
- Qualified for 31.5kA short circuit breaking capacity at 60Hz in addition to the 50Hz operating frequency thus becoming suitable for the North American market as well.
- With high RRRV (Rate of Rise of Recovery Voltage) of 2.35 kV/microsecond instead of the earlier 1.47 35 kV/microsecond, the breaker qualifies to interrupt transformer fed faults
- Re-designed interrupter for greater reliability and ease of maintenance. (Pole maintenance can now be carried out at site by opening the pole from the top.)

ABB has an installed base of more than 10,000 EDF circuit breakers presently in service. The above technology up gradations will help in improving grid reliability for power networks.

New range of Network Platform scanners for paper industry

ABB recently launched its new range of Network Platform scanners for the paper industry. The new QCS (Quality Control System) Network Platform family incorporates many performance enhancing features that enable papermakers to improve quality from smarter and faster measurement.

The new generation Network Platform maintains all of its predecessor’s advantages that have been field-proven and it will continue to be the industry’s strongest and smartest scanner, built on a rock solid design, providing fast, accurate measurement giving papermakers the highest profile resolution and the most advanced control in the industry. The new Network Platform can seamlessly co-exist with the existing ‘Smart’ platform on the same machine and will not require any modifications to the existing Quality Control Systems (QCS).

With over 50 years of scanning experience and more than 7500 scanners installed worldwide, ABB provides QCS solutions on more paper machines than any other company!

ABB launches new generation of Dynacomp

ABB has recently launched the new generation of Dynacomp dynamic response compensator. The Dynacomp is an ultra-rapid and transient-free capacitor bank especially designed for fast variable loads with low power factor, voltage drop and flicker mitigation. The reactive power step switching is done by state of the art thyristor modules. The use of these static switches and advanced controllers offers key advantages over conventional contactor switched capacitor banks.

Some of the key features of the new Dynacomp are:

- ultra-rapid power factor compensation
- reduction of voltage drop and flicker
- transient free switching
- very high number of switching operations
- modular and compact standardized design
- easy to install
- extend advanced communication features with Modbus

The new Dynacomp is equipped with an advanced controller and has a wide power range for all network voltages ranging from 380V to 690V. It is available in both three-phase and single-phase execution. There is also a choice of detuning reactors to suit all types of applications. It is also equipped with a Modbus communication feature. This makes it easy to integrate the Dynacomp within an existing communication network. This RVT-D controller also has a unique feature which allows the compensation of the voltage drop due to the active part of the load current ensuring best flicker mitigation even in a weak network.

ABB’s Dynacomp is the ideal choice for fast and smooth reactive power compensation and voltage drop stabilization for all types of fast variable loads with low power factor.
While we aggressively go about setting up power plants around the country, it is equally important for us to realize that it is not just a question of adding power capacity - it is as much about how we utilize existing power. While we strive for ‘more’ energy, we also need to optimize its use. We need to be far more efficient in our use of energy and ‘saving energy’ is as important for us, as creating additional generation capacity. Presently, on an average 35-40 per cent of the energy generated in India is ‘lost in transit’ (what we refer to as techno-commercial T&D losses). We must correct this embarrassing statistic with a missionary zeal.

Power systems are becoming increasingly complex with multiple variables in a highly dynamic setting. At the same time, these systems are also becoming more intelligent as they leverage information technology and communications to provide real-time information for better optimization and control. Integration, protection & monitoring systems are also helping enhance grid reliability.

This is where state-of-the-art network management solutions can play a key role. They can help ensure optimum production and delivery as well as improve the quality of power and facilitate better communication and balance between supplier and consumer needs. Some of these technologies include:

- Complete solutions for power plant automation, controls, instrumentation, optimization & electrics
- SCADA - Energy Management Systems - for geographically distributed HV & EHV Substation networks for effective monitoring and control from remote central location
- Distribution Management Systems - for geographically distributed MV Substations scattered around the city for effective and efficient distribution of Power from remote central location
- WAMS - Wide Area Monitoring Systems

Many of these IT based technologies can also be effectively leveraged to enable seamless integration across the entire power value chain. A transformed electricity system would, for example, enable a substantial increase in productivity, improve energy efficiency and resource utilization, and generate substantial additional wealth to meet the growing societal and environmental needs of the twenty-first century.

Going forward, we are clearly looking at smarter power systems. A grid that remains ‘on’, interconnected and interactive in a complex network of real-time information and power exchange. A grid that can constantly monitor and correct itself to attain the highest quality standards. A system that can sense disturbances and instantaneously reconfigure the flow of power to cordon off damage before it can spread.

A grid with the ability to combine centralised power generation seamlessly with an array of locally installed, distributed power sources and then integrate with the transmission and distribution grid, going all the way to the consumption point.

Some major Network Manager SCADA projects executed by ABB

- Chennai city SCADA - TNEB
- Reliance Energy Limited SCADA DMS - Delhi
- Reliance Energy Limited SCADA DMS - Mumbai
- PGCIL PESU SCADA DMS Billing
- MSEB PUNE - SCADA /DMS
- KPTCL Bangalore - SCADA/EMS/DMS
Comprehensive Network Manager SCADA

The Network Manager SCADA applications offer complete functions to fulfill the demands for supervisory control of power systems. The applications give efficient support for all states of operation as well as efficiently handling of disturbances. SCADA applications are built on a platform of full-graphics user interface, a real-time and relational database system, a modern process communication system and other services. The SCADA system is built on state-of-the-art standards. The application design is portable and provides for distribution on a number of hardware architectures.

Features:
- Data acquisition
- Redundant data processing
- Calculations
- Supervisory Control
- Tagging
- Map board / Video wall
- Alarm handling & presentation
- Historical and planning data handling
- Trend presentation
- Load shed and restore
- Disturbance data handling
- Control system supervision
- Full graphic HMI
- Network topology

Network Manager SCADA/EMS
- Determine optimum operations with regard to active power flow and voltage profile
- Determine operational security and detect congestions, identifying both active power loading and voltage collapse
- Record disturbances, perform analysis reporting and restoration tasks

Network Manager SCADA/GMS
- Scheduling of thermal and hydro generation
- Optimal usage of generation resources
- Support of energy trading
- Generation control

Portfolio Optimization
- Transmission
- Generation
- Market Operations
- Contract Settlements

A Generator Operating in a Power Market

Asia Deregulated Structure
Network Manager BMS

Network Manager BMS is a business management solution for today’s energy markets. It includes a set of advanced applications that support all of the functions performed by central market entities, including market participant’s communications (auction clearing, bids and awards and system status publishing via the internet), grid security analysis, unit commitments, resource scheduling, calculating market clearing prices for energy and ancillary services, meter data acquisition, financial settlements and market clearing.

Network manager BMS includes support for the highly advanced applications required to operate an energy market. These applications represent the cutting edge in energy IT systems and include the following:

- Security - constrained unit commitment for day ahead markets
- Security - constrained economic dispatch for real-time markets
- Automated mitigation process
- Web based and API interfaces for market participants
- Locational Marginal Pricing (LMP)
- State estimation
- Support for transmission rights management (FTRs/CRRs)

Network Manager SCADA/DMS

Network Manager SCADA/DMS is ABB’s integrated Distribution Management solution. This solution suite offers a seamless link between DMS and enterprise information systems.

Thus Network Manager provides operations management and control room staff with tools to efficiently manage the operation of dispersed distribution assets. At the same time it assists utilities to cope with the changing world of power distribution.

Main Features:

- Outage management
- Crew management
- Trouble call management
- Switch order management and automatic generation
- Meshed unbalanced load flow
- Real-time simulation mode
- Mobile dispatch integration

Network Manager DMS

Network Manager DMS is ABB’s integrated Distribution Management solution. It offers a seamless link between DMS and enterprise information systems.

Thus Network Manager provides operations management and control room staff with tools to efficiently manage the operation of dispersed distribution assets. At the same time it assists utilities to cope with the changing world of power distribution.

Main Features:

- Outage management
- Crew management
- Trouble call management
- Switch order management and automatic generation
- Meshed unbalanced load flow
- Real-time simulation mode
- Mobile dispatch integration
Powering Karnataka

An interview with Bharat Lal Meena, Managing Director, KPTCL and Chairman ESCOMs

Today, Karnataka is recognized among the front-runners when it comes to the power sector, thanks to the progressive approach of the state electricity utilities and Bharat Lal Meena, has played a key role in scripting this success story.

Among the best
- 15 million consumers are served across the state
- Installed generation capacity around 8000 MW
- Plans to enhance to 12800 MW by 2012.
- Bangalore city has the lowest T&D losses in the country at 9.5 per cent with not a single transformer having failed in the city during the last three years and Bangalore city has a 100 per cent collection rate
- Karnataka state T&D losses at around 23 per cent are also among the lowest in the country.
- Measures are on to reduce T&D losses to under 10 per cent in 300 towns across the state.
- There has not been a single major disturbance in the Karnataka grid since 2002.
- A total infrastructure outlay of Rs 23,000 crore has been planned for the 10th and 11th five year plan period (Rs 8,000 crore for transmission and 15,000 crore for distribution
- KPTCL plans to invest around Rs 2,400 crore in FY 2007-08 (triple its 2006-07 expenditure) on strengthening its transmission network and commissioning around 150 new substations.
- Under the Rajiv Gandhi Graminna Vidyuthikaran Yojna (RGGVY) scheme 1.8 mn. households are to be electrified across 16,000 hamlets

Please share with us some details of the RLMS scheme you have implemented and its success so far.

Simply put, RLMS is an innovative style of load management wherein the irrigation pump set (IP set) load and other loads (lighting, industrial, educational etc.) are bifurcated at the distribution transformer level to prevent load shedding on feeders. The load shedding then becomes circuit-wise, and other loads are spared. RLMS works on Programmable Logic Controllers (PLCs), which can be preset for load shedding as per the changing IP set power supply policy of the government or any pre-determined schedule. These PLCs can also be operated remotely.

The Rural Load Management Scheme (RLMS) is being implemented at an aggregate cost of Rs 200 crore in the first phase and Rs 350 crore in the second phase. BESCOM (Bangalore Electric Supply Company) is the first utility in the country to adopt this innovative scheme. It has identified 282 of the 900 rural feeders (one-third) for the first phase of works.

With RLMS, we hope to enhance consumer satisfaction in the rural domestic, commercial and industrial categories due to improved voltage profile, better availability especially during daytime. Metered consumption of IP sets is also likely to increase and accordingly collections. Number and duration of interruptions should also reduce considerably.

The key advantages of RLMS can be summed up as follows:
- Uninterrupted supply to rural consumers (except IP sets)
- Scheduled power supply to IP sets
- Reduction of input energy
- Increase in metered consumption
- Reduction in transformer failures
- Consumer satisfaction

Could you share with us some of your key IT based initiatives?

We have undertaken many key IT initiatives for the benefit of consumers and these have also helped increase efficiency of the utilities. Some of the main ones are:
- Computerised billing
- Bescom’s user-friendly website
- E-mail services
- Centralised Consumer Billing Information
- Interactive Voice Response System (IVRS)
- Management Information Systems (MIS)
- Cash Management System
- Works Management System
- Feeder Network Analysis
- Mobile Messaging System
- Bescom Wide Area Networking
- Web based consumer billing and payment is another initiative under implementation

KPTCL’s network management project is considered the biggest of its kind in India. What would be the main benefits once it is completed?

We are implementing an integrated Network Manager SCADA/ EMS/DMS (Supervisory Control and Data Acquisition, Energy Management System, Distribution Management System) solution, with ABB. This system will monitor and control 830 main substations across the state, including the city of Bangalore and is the biggest of its kind in India in terms of coverage span. This solution, once commissioned to its full potential, will enable us to monitor and control the entire transmission and distribution network from a single control room and in real time.
The solution incorporates energy and distribution management applications such as load-sharing technology and availability-based tariffs, which encourage users to keep to pre-arranged schedules. These features enable better planning and help to maintain a steady supply of power under normal conditions. They also facilitate quick restoration of power in case of outages, operational flexibility, archived data and reduction in losses caused by outages, besides bringing several operational efficiencies and commercial benefits.

We expect better grid reliability and efficiency through better monitoring, control and network management. Outages as well as down-time should be reduced and we expect better monitoring and control of system losses. Moreover, the system will help us integrate the back-end processes with the front-end i.e. billing and revenue management.

Our next step is the Bangalore Distribution SCADA solution, which we expect to commence in early 2008 and be completed by 2010. This project will be set up with JBIC funding and will serve as a prototype for other distribution circles.

**Could you share with us your future vision for the Karnataka network?**

I am keen to share the success of BESCOM across all the ESCOMS in the state. With this objective we have devised a 61-point ‘Chairman’s Agenda’ to serve as a guiding document and help them chart their future course. The guiding principles are:

- To set up knowledge based systems
- To improve consumer relationships through value addition
- Increase transparency and financial viability through reforms and restructuring
- To leverage technology more effectively
- To achieve higher efficiency and productivity levels

Highlights of this agenda include:

- Metering of all installations
- Reconductoring of trunk feeders with Rabbit conductors & 33 kV lines with Coyote conductors
- MIS-IT initiatives including transformer management system, online accounts system, consumer billing on the Net, e-tendering, inspection software etc.

- Centralised billing information
- Total revenue management
- Each division to operate as a Strategic Business Unit
- Meter outlets to be established in each division
- Setting up a dedicated cell for HT consumers
- Preparation of intra-state Availability Based Tariff (ABT)
- 24x7 customer care center to be established in each division
- Weekly ‘Jan Sampark Sabhas’ in each sub-division
- ‘Soujanya’ counters to be established in each division for consumer convenience
- Focus on service quality (target a reliability index of 99.9 per cent for urban and 99 per cent for rural feeders)
- Achieving a zero failure rate for distribution transformers in urban feeders and 0.5 per cent in rural feeders

**Could you briefly share with us your thoughts on energy efficiency?**

While we strive for ‘more’ energy, we will also need to optimize its use and prevent wastage through losses. Saving energy is as important for us, as creating additional generation capacity.

We should promote the idea of energy audits for all consumption categories and rationalize the use of power. Every individual can and must make a difference. Modern devices like CFL lamps and greater leverage of alternate energy sources e.g. solar power for applications like heating, refrigeration etc. will also help rationalize power usage. Energy efficient equipment and use of variable frequency drives for buildings, industrial and other applications (e.g. pumps, fans, compressors etc.) can also increase the efficiency of power utilization and help conserve energy.

State-of-the-art technologies are playing an important role in ensuring reliability and efficiency of power networks contributing to energy optimisation. There is also a growing focus on technologies that have lower environmental impact and are more compact in terms of their footprint.

**What is your experience of working with ABB?**

We have worked with ABB on many projects over the years and also pioneered many technologies such as RLMS and now the state-wide SCADA. ABB technologies and people are clearly the company’s greatest strengths. In fact it would be good to see a technology leader like ABB proactively bring more state-of-the-art technologies and experiences to India, based on their global experience and domain expertise. Best practices in areas like project management and field execution would also go a long way in improving speed and efficiency - a great need in a country like ours as we strive to move faster to close the wide power demand-supply gap.
Energy is vital for industries to operate. Many of ABB’s energy-intensive customers require a reliable and stable energy supply for the motors that drive compressors, pumps, fans and machines. Some operate in areas where the public electricity supply is unreliable or non-existent meaning they must rely heavily on their own generation capabilities. An unscheduled trip in, for example, a refinery or a liquefied natural gas (LNG) plant due to a total loss of power could result in several days of lost production. When translated, this represents a value exceeding $10 million.

Because of this dependence on electricity and the volatility of energy costs, combined with a growing environmental consciousness and more stringent legislation, efficient energy management is becoming ever more important.

ABB’s IndustrialIT Power Management System (PMS) is a family of unique solutions that ensure reliable and stable energy supply for energy-intensive industries. The PMS balances energy demands with the available energy supply, thus preventing disturbances or even blackouts in operations. Furthermore, it enables a company to control its energy costs, to enhance safety, and to mitigate environmental and health impacts.

Not on my watch

How ABB’s Power Management System prevents multi million dollar shutdowns

Otto van der Wal, Trond Haugen, Per Erik Holsten, Fred Lems

The situation in nearly any blackout is almost always the same: one part of a system fails forcing nearby equipment to absorb its load. This equipment is then pushed into an overload mode causing it in turn to fail. These multiple failures snowball and a large area ends up in the dark with potential dire consequences including potential loss of life, loss of production and damaged equipment.

It is imperative that process upsets and shutdowns are avoided as they will have a negative effect on the financial, environmental and social performance of a company. Power supply reliability and power quality affect both throughput and safety; therefore avoiding black-outs and power disturbances are of substantial value to any process plant. Equipment must be monitored continuously to ensure optimal performance and stability over time. The extremely fast dynamic properties of the electrical process require quick response times – of the order milliseconds – to prevent protection relays from issuing trip commands leading to a domino effect in terms of equipment overload.

Inefficiency isn’t just costly in terms of excessive fuel consumption; high emissions can rack up the cost still further. Solutions that help lower operating costs while reducing environmental impact are sorely needed by industry.

One such solution, ABB’s IndustrialIT Power Management System (PMS), helps achieve stable operation whereby the electrical plant as a whole can withstand larger disturbances from within or from outside the plant. This application package contains not only the traditional SCADA functionality but also a full
complement of electrical solutions including Power Control and Load Shedding, two major functions that are described in details in this article.

A common platform for process control, safety, power generation and utility control

The PMS is based on ABB’s Industrial IT Extended Automation System 800xA [1, 2], which is designed to monitor, control and protect all sections of a process plant. This common industrial IT platform provides control functions, and a flexible and well organized single-window interface that allows operators to work efficiently. In addition, advanced functions such as intelligent alarm filtering, consistency analysis and operator guidance help reduce the need for operator intervention and, more importantly, these functions can prevent incorrect interventions.

The importance of systematic operator training in a realistic setting is increasingly acknowledged as a prerequisite to reach operational best in class targets. The Industrial IT Training simulator can be conveniently deployed in the integrated Training Simulator, where control strategies – such as load shedding priorities – and “what-if” simulations can be tested prior to deployment.

PMS main functions

The PMS provides an integrated set of control, supervision and management functions for power generation, distribution and supply in industrial plants.

Such broad functionality is partially represented by modules commonly used by the industry under different names1).

In addition to the traditional functions of supervisory control and data acquisition (SCADA), the system offers:

- SCADA electrical functions:
  - Generator control including integration with the governor and excitation controller.
  - Circuit breaker control including integration with protection relays, event monitoring, time synchronization with 1ms resolution. Synchronization between two electrical islands must be performed and checked by the PMS before a circuit breaker is closed. The generators used for synchronization can be selected manually or automatically. This is performed by the synchronization function.
  - Transformer and tapchanger control: the mode control function changes the control mode of tap-changers, governors and excitation systems according to the status of the electrical network. 2
  - Motor control including integration with motor control centers, time synchronization, automatic sequential re-start and re-acceleration release after load shedding or under-voltage.

Network Determination

The Network Determination function is an important supporting function for the Power Control, Load Shedding and Synchronization functions.

By checking the open/close positions of critical circuit breakers in the electrical network and using its internal “knowledge” of the electrical network topology, the Network Determination function can determine network contingencies.

The PMS uses sophisticated matrix calculations to determine electrical network contingencies. Network contingencies must be calculated in a matter of milliseconds after a circuit breaker position has changed and are therefore determined by complex logics. To give an idea of the complexity and size of the necessary logic, an electrical network with one grid connection and eight generators has $2^{15} - 1$ possible network contingencies.

The electrical network matrix is a square matrix with same number of columns and rows. Each column and row represents a (main) bus bar in the electrical network. The cells in the matrix represent circuit breaker positions which are the connections between the (main) bus bars.

The Network Determination function calculates the electrical network contingencies from this matrix - it calculates a “reduced” network matrix. The number of rows in this reduced network matrix is equal to the number of sub networks (or network islands) in the electrical network. The reduced network matrix is used by: Power Control to calculate imported and generated power and balance loads in sub networks; Load Shedding to calculate imbalances between available and required power; Synchronization to check which power sources (grid and generators) are available to achieve synchronization.

The Network Determination function calculates the electrical network contingencies from this matrix - it calculates a “reduced” network matrix. The number of rows in this reduced network matrix is equal to the number of sub networks (or network islands) in the electrical network. The reduced network matrix is used by: Power Control to calculate imported and generated power and balance loads in sub networks; Load Shedding to calculate imbalances between available and required power; Synchronization to check which power sources (grid and generators) are available to achieve synchronization.

In the following paragraphs, the control strategies contained within the overall Power Control package are described.

Tie-line control

The Tie-line control function, which is part of Power Control, optimizes the power exchange with the Public Power Company (PPC) to an adjustable setpoint based on contractual obligations, such as the maximum 15 minutes peak value used in Europe.

The importance of systematic operator training in a realistic setting is increasingly acknowledged as a prerequisite to reach operational best in class targets.

It works as follows: the PMS measures the...
imported (or exported) power, or the transmitted power between different locations, by counting pulses from energy meters. From these measurements, a sliding 15 minutes power demand forecast is calculated. When power demand tends to exceed contracted electricity import limits or a setpoint specified by an operator, the PMS will initially try to increase in-plant generation to avoid exceeding the contractual obligations. If this is not possible, the Tie-line control function will interface with the Load shedding function (see Peak Shaving below) to shed sufficient non-critical loads.

**Active Power Control**

As part of Power Control, the Active Power Control module performs frequency control and active power flow control at an exchange point with the grid. It monitors the actual network configuration and sends an active power setpoint to the participating generators to:

- Maintain the bus bar frequency at a pre-defined value if that particular network is isolated.
- Or maintain an active power flow between a particular network connected to the grid.

Active Power Control Aspect decides if frequency control or power flow control is applicable. This decision depends on the actual network configuration. This means no operator interaction is required after a network configuration change.

The active power setpoints are sent to the participating generators, i.e., the generators that act in Governor Auto-mode.

**Power mismatch**

In the case of frequency/voltage control, the working point, taken from the bus bar, is subtracted from the setpoint. In case of active power control, the difference in [Hz] is converted into an active power unit [MW].

In case of power flow control, the power working point at the exchange point is subtracted from the power setpoint.

**PI control**

The input to the PI control element is power mismatch. The output of the control element increases/decreases as long as there is a mismatch at the input of the PI control element.

**Participating factor**

The operator can assign a participating factor to each generator. This determines to what extent the generator will participate in power control. To decide on the most suitable participating factor, the operator can look to calculated factors based on the available control margins. There are participating factors for active power control and reactive power control.

**Power setpoint per generator**

A power setpoint can be set to keep the generator at a desired spot in the generator capability curve without affecting the frequency/voltage or active/reactive power flow control.

**Reactive power control**

The Reactive Power Control module is the Object Control Aspect for voltage control and reactive power flow control at an exchange point with the grid. It monitors the actual network configuration and sends an reactive power setpoint to the participation generators and/or transformer to:

- Maintain the bus bar voltage at a pre-defined value. Maintain a reactive power flow between a particular network and the grid, or another network.
- Maintain the powerfactor at the exchange point.

The Reactive Power Control Aspect decides if voltage control or reactive power flow control is applicable depending on the actual network configuration.

This means that no operator interaction is required after a network configuration change. The reactive power setpoints are sent to the participating generators and transformer.

Also a reactive power setpoint can be set to keep the generator at a desired spot in the generator capability curve without affecting the voltage and/or reactive power flow control.

**Reactive power control in cooperation with transformer control**

A transformer is used for main control when it participates in voltage control or reactive power flow control. Transformer control maintains the voltage or reactive power flow at a desired setpoint and the remaining mismatch between setpoint and working point (measured value) is minimized by the AVR control of the participating generators.
Control parameters as gain and time integration are adjusted in such a way that the transformer control prevails.

**Load Shedding**

The PMS Load Shedding function ensures the availability of electrical power to all critical and essential loads in the plant at all times. Load shedding is achieved by switching off non-essential loads when there is a shortage of power generation capacity in the electrical network of the plant.

There are four different types of load shedding:

- **Fast Load Shedding** is based on electrical energy balance calculations. As soon as one or more electrical islands are detected (using network determination software), the system calculates if there is enough electrical power available in every individual island to power the loads. If not, any existing demand surplus is shed. The shedding process is dictated by priority tables, which are based on the operational conditions of the process.

- **Frequency Load Shedding** (or backup load shedding) uses a frequency drop as an input to activate load shedding. Activation of an actual shed command can be based on a frequency decay or by passing a frequency threshold. Frequency Load Shedding is usually used as an independent back-up system for fast load shedding.

- **Slow Load Shedding** is used when an overload has occurred. For example if a transformer is loaded at 120%, switching off some loads to bring the transformer back to its nominal load is by far the best solution. The system advises the operator which non-critical loads he can switch off. This manual effort must be done within a specified period of time otherwise the system will do it automatically.

- **Peak Shaving** is another type of slow load shedding and occurs when the following situation arises: if in-house generation is maximized but it seems highly probable the 15 minutes sliding maximum power demand will exceed the contracted maximum value, then some of the low priority loads are shed. Manual Load Shedding is mainly used when one of the aforementioned conditions for Slow Load Shedding occurred but operations did not allow the system to shed automatically.

**How much to shed?**

The ABB system is fast because it doesn’t wait for a decrease in frequency before it starts to shed loads. Instead, its decision to shed – as well as how much should be shed – depends on the balance between the amount of power generated and consumed in every island. To execute load shedding within 100–250 ms of a disturbance, however, many calculations must be done in advance.

Deciding how much power should be shed depends on the number of priorities used, the size, in MW, of the load shed groups, and the availability of system measurements.

ABB’s load shedding set-up is very flexible because an operator can adapt (online) the priority of the various plant loads to the process operating conditions and the electrical network. Also at the moment the system determines the shedding order, it considers how much spinning reserve is available. To utilize this reserve, the system can, and will if necessary, change the operating mode of a generator.

The coordination between load shedding and re-acceleration is also important. Re-acceleration is disabled when a load shedding action is required, and is immediately restarted once the conditions for load shedding have vanished.

In certain industries energy costs represent approximately 30 percent to 50 percent of the total production cost.

**Summary**

The PMS benefits are clearly visible during: The plant definition phase: the improved system stability allows tighter dimensioning and thus reduced costs. Plant start up: the PMS will ensure the power system capacity is not violated at any time by holding load start commands until the system can provide the power required to start a particular load. This helps get the plant safely on stream as quickly as possible.

All phases of plant operation: the PMS will control generators and transformer tap-changers to ensure stable power system operation, as well as monitoring and controlling active and reactive power exchange with the public grid. The general workload and number of interventions from the operators are reduced.

Maintenance planning: comprehensive data are recorded and aggregated on the condition of the electrical assets. The appropriate ABB Industrial IT Asset Monitors can monitor this data automatically, and the responsible people are notified when actions must be taken. The ABB Industrial IT Asset Optimizer workplace provides the overview of equipment health and the base information needed to plan maintenance campaigns. The PMS can also be part of a broader electrical system delivery from ABB. In certain industries such as chemical, petrochemical, cement and steel, energy costs represent approximately 30% to 50% of the total production cost. ABB’s PMS can pay for itself in a short space of time just by ensuring greater efficiency of power generation, import and usage under varying operating conditions.

The investment can easily be justified in both green and brown field plants, and several examples of recent installations exist around the globe. The same system is used for both electrical and process control allowing cost reduction in training, spare parts and maintenance.
Digital pen & paper speeds up response time of ABB service teams

ABB service engineers in the UK are using technology so that they can devote more time to working for customers and less time chasing paperwork. Thanks to digital pen and paper (DP&P) technology, completed service forms can now be sent from the field to the office in just two minutes, allowing ABB to respond more quickly to the needs of its customers. The DP&P technology is sufficiently robust to use almost anywhere that a traditional pen and paper can go. The technology uses a pen that records exactly what the engineer writes using a built-in camera and digital memory. Once the form is complete, the engineer simply ticks the box at the bottom to send the information to their mobile phone and from there back to the office. The hard copy can be left on site for the customer.

Safe & reliable power for China’s metros

The metro and light rail transportation systems in China’s largest cities, including economic dynamos of Shanghai, Beijing, Tianjin, Guangzhou and Shenzhen, have one thing in common - they all use ABB’s UniGear ZS1 or ZX2 medium-voltage switchgear to ensure power reliability. The new high-speed LRT that will shuttle tens of millions of passengers a year between downtown Beijing and the city’s new Capital Airport is the latest of many. With more than 50,000 panels already in operation, the compact, robust and safe UniGear switchgear is the product of choice to ensure reliable power supplies for commuter railway systems in China’s biggest cities.

The new wave in power generation

The world’s first commercial wave power projects are expected to be new sources of renewable electricity for European transmission grids. The custom-built generators are a key component in an innovative new wave energy technology that will enable electric utilities to boost their renewable energy capability and reduce their emissions of greenhouse gases. At the heart of each power generation system is a customized ABB generator, designed to meet the demanding requirements of the application. ABB’s focus throughout the project was to reduce the cost per kilowatt-hour of generating wave power by improving generator efficiency and reducing sizes and stresses to help make wave power economically competitive.

ABB technology connects U.S. and Mexico power grids

Engineered by ABB, Sharyland is the first large-scale asynchronous interconnection to support both emergency power exchange and commercial energy trading between the United States and Mexico. The HVDC back-to-back tie connects the state power grid of Texas and the national power grid of Mexico. It enables 150 megawatts of power to be transferred in either direction and allows each grid to support the other during peak demand and grid emergencies. With strengthened grid reliability a key priority, ABB designed a HVDC solution that includes a unique black start emergency assistance capability that provides a safe supply of power during a blackout in either AC grid.

Reliable power distribution on Shanghai-Yunnan Expressway

ABB has supplied the complete range of medium voltage equipment for the Shanghai-Yunnan Expressway, a key highway stretching 535 kms offering a smooth ride through a tough, hilly terrain between the two Chinese cities. ABB has supplied 10 kV Safe switchgear, 10 kV outdoor cubicle-type substations and protective relays which will be used for power distribution on this expressway.
Channel partners meet
ABB Group Chairman & CEO

On their recent visit to India, the ABB Group Chairman Dr. Hubertus von Grünberg and President & CEO Fred Kindle took time out to interact with 45 of the 750 channel partners from all over India. ABB India Country Manager & MD Biplab Majumder, set the context and shared the rapid growth of ABB’s channel business in India. Dr. Grünberg and Fred Kindle thanked the channel partners for facilitating the strong growth of ABB’s standard products business in India and their role in helping the company to reach out to customers and markets beyond its own reach. ABB India Chairman Ravi Uppal, summed up the proceedings after an enthusiastic Q&A session where the ambition levels of the channel partners was clearly evident.

Performance counts!

ABB India recently hosted its Presidents’ Club Meet, at Bangalore, to felicitate and honour the company’s top Channel Partners across businesses. The growth of ABB’s automation products business owes a great deal to the stellar performance of 750 channel partners spread across the country.

Addressing the gathering, Biplab Majumder, Managing Director & Country Manager, ABB India commended the zeal of the Channel Partners and thanked them for their support in promoting a shared vision for growth. He acknowledged their dedicated partnership and loyalty that has contributed to the exponential growth of the automation products business in India.

R Narayanan, Head - Channel Business Organisation, ABB India, presented an update on the latest developments in range and capacity expansion. He also congratulated the Channel Partners for their achievements and urged them to maintain the strong growth momentum going forward.

The Channel Partners on their part assured ABB of their continued loyalty and support in pursuing a common growth ambition.
Living our commitment to Sustainability

ABB sets up a power safety training school in Jaipur

Enhancing the drive on safety and quality in urban and rural electrification projects ABB in India recently established a fully equipped training school in the city of Jaipur. The objective of the school is to make ABB project sites accident free and ensure world-class quality standards in all installations. Training is imparted in three disciplines i.e. safety procedures, quality systems and survey techniques and covers processes from inception to completion of projects.

Participants will include construction workers, supervisors, engineers and project managers from contractors as well as within ABB. Facilities at the school include an outdoor hands-on demonstration area with various site prototypes including double pole structures with conductors and disc insulators, distribution transformers operated by Switch Fuse Units (SFU) and earthing arrangements. The centre also has a training hall where 35 participants can be trained at a time, a display room to showcase safety and quality equipment, a conference room and cafeteria facilities.

The right to better sight

One of ABB India’s main sustainability pillars is education. The company has adopted five schools across the country to help develop infrastructure and undertake deeper engagement initiatives to facilitate education for economically & socially disadvantaged children and enrich their learning experience. In keeping with this endeavour, ABB recently organized an ‘eye camp’ for around 530 students of the recently adopted Rajiv Gandhi Nagar School close to its manufacturing hub in Peenya (Bangalore).

Dr. Jyoti and her team of voluntary service doctors from Narayana Nethralaya, a super-speciality eye hospital based in the city, conducted the check-ups for children in the age group of 6 to 12 years, in association with the Rotary Health City, a leading organisation undertaking social welfare projects. The ABB India sustainability team coordinated the camp. Earlier in the year, ABB India undertook a similar initiative for around 800 students of Nelagudaranahalli Primary School in Peenya. Following the check-up, spectacles and follow-up treatment were also arranged for the children in need.
Power remains one of India’s biggest challenges and given the rate of growth we are witnessing there are no quick fix solutions. However, we must plan for the future and put technology to the best use in order to ensure efficiency. We hope you enjoy reading this issue of CONTACT and on behalf of the editorial team, I wish you all the very best for a glorious 2008!

Harmeet S Bawa, Head, GF-Communications, ABB India & SAS Region

www.abb.co.in/contact
Welcome to the world of ABB.

Showcasing new technologies and innovations:

**Power technologies**
- 765 kV Circuit Breaker
- CT with polymer insulators
- PASS
- 33 kV CSS
- Vacuum Tap Changers
- Fuseless Capacitors
- Surge Arrestors
- IEC 61850 Substation Automation System
- Network Management - SCADA

**Automation technologies**
- ACS M1 Drive
- DC Drives
- New generation LV Switchgear
- EIB
- Energy efficient motors
- MNiS Panel
- System 800xA
- Robotics
- Integrated Building Management Solutions

Visit us at
ELECRAMA 2008
Bombay Exhibition Centre, Mumbai
18 - 22 January, 2008
Hall No. 1,
Stall No. – H1K35L36

For invitation cards, product information please write to us at
gf-cc.india@abb.co.in

www.abb.co.in

Power and productivity for a better world™