

Issue 3 / 2004

CONTACT

The ABB India Magazine

Bringing **power**
to the people

Bringing **power**
to the people

ABB

CONTACT

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Dear Friends,

Given India's widening power deficit and the rise in household and industrial demand, there is a clear need to recognise power as a vital growth engine

and approach every segment of the sector with a sense of urgency and non-political focus. Significant capacity addition is an imperative as the demand-supply gap widens and we cannot continue to add a mere 3000-5000 MW p.a. when neighbouring China is adding almost 10 times that, despite the fact that their existing installed capacity is more than 3 times ours !

On the power transmission front, development of the national grid, deployment of cutting-edge technologies, addressing grid reliability, system efficiency, protection, safety, theft, cascading problems and rural electrification are the key areas, which need to be addressed.

Implementation of the Electricity Act needs to be accelerated, as it introduces many key elements of sectoral reform eg. unshackling power generation, power trading, competition, tariff rationalisation, distribution policies, etc.

Distribution remains the most critical focus area for the power sector and although it is in 'reform mode', the momentum must be accelerated. Distribution system improvements and reduction of T&D losses are top priorities and 'low hanging fruits', which can release much needed capacity. Automation and IT leverage must be encouraged to bring greater control and grid efficiencies, eg. SCADA / WAMS, billing systems, remote metering etc. Acceleration of the APDRP programme, corporatisation of SEBs and tariff rationalisation will also help in streamlining the system and ensuring financial viability.

The main theme for this issue of CONTACT is, 'Bringing Power to the People'. This article is aimed at providing a bird's-eye view of how ABB's cutting-edge technologies facilitate the flow of power from the point of generation to consumption, across transmission highways, transcending grids, passing through distribution networks and reaching all the way to factories and homes. ABB has pioneered several key power technologies around the world as well as in India and is recognised as a global domain leader, enabling system efficiency and enhancing competitiveness for some of the world's leading utility and industry customers.

Collectively, our ultimate challenge is to ensure availability, reliability and quality of power at a 'fair' value to consumers and we look forward to your continued support in this common cause!

Yours sincerely,

Ravi Uppal

Vice Chairman & Managing Director, ABB India

India Round-up

Cementing relationships

ABB has won an order from Dalmia Cement Ltd., to supply AC and DC drive systems for their expansion project at Dalmiapuram. The scope includes supply and commissioning of 19 ACS 800 LV AC Drives, 5 ACS 1000 MV AC Drives and DCS 500 DC Drives for their new plant, near Tiruchirapalli, Tamil Nadu, in South India.

Dalmia chose ABB as the preferred supplier due to its technology strength, the large number of medium voltage drive installations in India and a strong local service support.

The Industrial^{IT} enabled drives will allow seamless connectivity to the plant level automation systems making plant operation, control and monitoring easier.

Chettinad Cements' plant at Karaikal was the first cement plant in India to be equipped with ABB medium voltage drives based on Integrated Gate Commuted Thyristor (IGCT) technology, pioneered by ABB, and replaced the traditional slip power recovery systems.



These drives have been extremely successful in terms of performance and efficiency enhancement. "Every satisfied customer becomes an ABB brand ambassador and creates new market opportunities. This is of immense value in an increasingly competitive market," says Biplab Majumder, Head-AT Division, ABB India, commenting on the latest success.

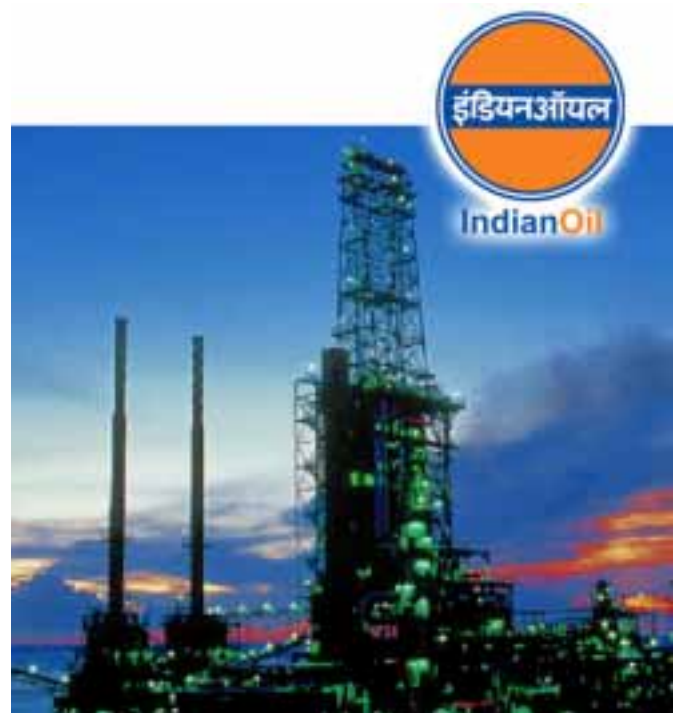
More for less

ABB has successfully implemented the first Advanced Process Control (APC) solution for IOCL's Barauni refinery, for three Atmospheric & Vacuum Units (AVUs), also known as the 'mother' units of the refinery. ABB surpassed IOCL's minimum specification of 90% online factor for Site Acceptance Test (SAT) and delivered an online factor in excess of 99.5% for all three AVUs.

ABB's solution will help IOCL lower their current cost of crude production.

ABB's advanced solutions encompass:

- Multivariable control
- Real-time optimisation
- Proprietary process model-based control
- Process modelling
- Dynamic simulation for training and engineering applications
- Neural network models
- SPC and MvSPC



ABB's advanced application services include complete installation and commissioning services, process control performance auditing, plant performance benchmarking and process evaluation and development.

System 800xA - breaking new grounds

When it came to selecting a Distributed Control System for its world-class manufacturing facility at Dewas, in Madhya Pradesh, Ranbaxy, one of India's largest pharmaceutical & life sciences companies, has chosen ABB's newly introduced System 800xA technology.

Ranbaxy Laboratories Limited is engaged in manufacturing and marketing generics, branded pharmaceuticals and active pharmaceutical ingredients and ranks amongst the top 10 generic companies globally.

Ranbaxy has selected ABB's Automation System 800xA for their upcoming CLA/ CILIM facilities at Dewas, located in Madhya Pradesh. The 800xA system will offer Ranbaxy several features including the Audit Trail with Batch server and conformance to FDA regulation of 21 CFR Part11, a mandatory requirement for exports to Europe and USA. The life sciences industry in India is expanding fast and increasing its exports to the west.



The 800xA system extends the scope of traditional control systems to include all automation functions in a single user and engineering environment so that plants/mills can run smarter and more efficiently with substantial cost savings. ABB's endeavour of 'Evolution through Enhancement' ensures that future advances in systems' technologies will enhance rather than compromise customers' current investments.



The system dramatically improves plant-wide productivity by providing integrated core functions such as Operations, Engineering, Information Management, Batch Management, Asset Optimisation, Control & I/O and Fieldbus (Field Device Integration).

ABB's Industrial^{IT} based System 800xA was recently launched in India. Around 800 engineers from around the world worked on its development including 50 research engineers from ABB's global Corporate Research Centre in Bangalore.

ABB's Industrial^{IT} System 800xA is built on the Industrial^{IT} Aspect Object™ technology platform and industry specific expertise and enables a seamless link between process and business management to deliver knowledge-based solutions.

By removing the barriers of traditional distributed control systems (DCS), the 800xA system supports the platform, application, and professional service needs of total plant management and control. It dramatically improves plant-wide productivity through the following powerful, integrated core functions.

With System 800xA, customers have the ability to extend the automation reach of their present system to enjoy new levels of productivity. It provides the flexibility to implement the functions these customers require today and the agility to add others as needs evolve. System 800xA extends the scope of traditional control systems to include all automation functions in a single operation and engineering environment so that plants/mills can run smarter and better at substantial cost savings.

Time tested...

We are not talking about a popular brand of batteries or tyres. We are talking about ABB current transformers (CTs). Approximately sixty of ABB's 220 kV CTs have been in successful operation at the MSEB, Kalwa in Maharashtra substation without failure for almost 20 years! A quarterly service and maintenance schedule involving tightening of primary technical connections and cleaning of insulator surface has helped extend the life of the CTs and maintain consistent performance.



First commercial TCSC in India successfully commissioned by ABB

ABB has successfully commissioned a state-of-the-art FSC (Fixed Series Capacitor) and TCSC (Thyristor Series Controlled Capacitors) installation at the Raipur end of PGCIL's Raipur-Rourkela 400kV double circuit AC power tie line. This installation will enhance the transmission capacity of the line and enable larger power transfers from the power surplus Eastern region to the power deficit Western region using the existing Raipur-Rourkela line, with significantly improved power factor and stability.

This is the first commercial TCSC installation in India and only the 6th in the world. This TCSC installation will help maintain grid stability during large amounts of stable power transfer in the inter-regional Raipur-Rourkela 400 kV double-circuit tie-line. Power Oscillation Damping (POD) controllers have been provided to handle system disturbances and prevent further spread.



The TCSC is also equipped with a special SVR feature to prevent Sub-Synchronous Resonance (SSR) due to capacitors present in the circuit. The installation of the Fixed Series Capacitor (FSC) will compensate inductive reactance, thus improving voltage profile while reducing reactive power loading.

This installation has the largest capacitor rating (930MVar), the largest capacitor bank size of 131.4MVar (in the FSC installation) and the

highest unit current for a capacitor bank of 133A (in the TCSC installation) commissioned in the country to date.

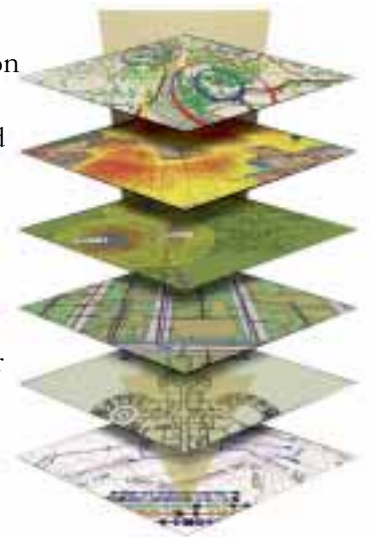
The required Type Tests as per IEC 60143 for the capacitor units for both FSC and TCSC were successfully taken up in India. For the discharge current test a facility was specially developed at ABB's R&D centre EHV Lab in Vadodara and the test involved 10 short-circuit discharges at 4 times rated voltage on the series capacitors.

Indexing and mapping technology for Bangalore's power distribution network

ABB has received an order from BESCO, Bangalore's electricity distribution utility for implementing a consumer indexing and asset mapping of the BESCO distribution network. ABB will supply, for the first time in India, its sophisticated Facil Plus Mapper and Analyser packages. The system will help in monitoring, controlling and enhancing the efficiency of the distribution system, improving power quality, reducing both technical & commercial T & D losses and lowering power outages.

The project scope will encompass indexing consumers, developing maps of the distribution network, covering 11 kV feeders & distribution

transformers as well as consumer data collection through geospatial survey. The customised Facil Plus application software will be used to integrate single line diagrams of the distribution network with updated consumer related data, network attribute data for distribution planning, data analysis and reporting.



Enhancing customer performance

The state-of-the-art training centre for power technologies, set up at ABB's Vadodara unit, recently completed its first year of operation and has been contributing significantly towards enhancing customer performance and helping them optimise their return on investment.

The centre conducts a wide range of programmes including hands-on operations training, maintenance and repair of HV & MV equipment (Circuit Breakers, Current Transformers, Capacitor Voltage Transformers, Power Transformers), class room sessions on product design, equipment conditioning monitoring and RLA studies. It offers unique training programmes spanning a range of power technologies, such as the special session on equipment from 400 V to 400 kV. Customer training programmes are often tailor made to fulfill specific needs.

The Centre has drawn participants from all parts of India and even from across the shores – Australia, South Africa, Morocco, Vietnam and Uganda. The centre successfully completed 2,500 training man days in its first year of operation. 95 per cent of the participants have been engineers, service personnel and management staff, representing key customer organizations while 15 per cent were ABB employees.



The centre's comprehensive facilities include sophisticated learning aids such as multimedia presentations, computer simulations and product cut-outs, a demo room with operating models of a wide range of products and assemblies, practice benches for hands-on training, well-equipped classrooms with instant access to ABB University (an online e-learning website) and an outdoor switchyard with operating models of HV and MV circuit breakers, current transformers, capacitor / voltage transformers, capacitors, disconnectors, transformers, etc.

Integrated substation automation solution implemented at BPCL

As part of BPCL's Mahul Refinery Modernisation Project (RMP), ABB has implemented a state-of-the-art integrated substation automation system with MicroSCADA based Man-Machine Interfaces (MMIs) for 5 substations in the refinery. The system will provide centralised monitoring, control and sequence of event recording for improved fault finding and lower outages.

ABB has also supplied 6.6/22kV medium voltage switchgear panels with vacuum/SF6 circuit breakers and numerical relays.

The functionalities offered include centralized monitoring / control of medium voltage (6.6kV & 22kV) and low voltages switchgear, numerical relay status and communication



systems as well as signals from various equipment including Load managers, Transformer tap changer control system, battery chargers, plant lighting systems etc. Numerical relay settings and parameterisation can be carried out from a centralised place. Provision for disturbance records uploading will enable accurate fault finding for preventive actions.

Special features of the system include

- First integrated substation automation system for a refinery in India
- System architecture with five different Substation Automation Systems interconnected to a centralised place with dual redundant communication over fiber optic network at 10 MBPS
- Numerical relay communication on STAR topology over fiber optic media at 1.25 MBPS
- Time synchronization of all the numerical relays with the Global Positioning Systems (GPS) to generate sequence of events up to 1 millisecond resolution

IT in Power

ABB showcased some of its state-of-the-art IT-based offerings for the power transmission and distribution sector at 'IT in Power – The Next Steps' a conference organised by Powerline and India Infrastructure in New Delhi.

At this power packed conference, ABB took the lead in sharing the latest technology trends in the power utility sector and also showcased some of its state-of-the-art Utility Automation technologies. ABB's GIS (Geographical Information System) based demonstration showing a Consumer Indexing and Asset Mapping System on a Geospatial database for distribution networks generated enthusiastic response.

ABB also conducted a session on cutting-edge IT enabled technologies for power generation, transmission and distribution and demonstrated how IT based technologies are playing a critical role in the development of power distribution systems, in the quest for greater grid efficiencies,



Mr. Claes Ryttoft, Technology Head for PT Systems, ABB Group, conducted a session on cutting edge IT enabled technologies for power generation, transmission and distribution.

control and monitoring by leading utilities. ABB also shared the success story on the SCADA Distribution Management Systems with special focus on Hyderabad and Chennai, the first two cities to adopt comprehensive SCADA systems (both undertaken by ABB).

Enhancing productivity at INDAL

An interaction with S Majumdar, Jt. President, Engineering, Projects & Materials Management

India has the fifth largest bauxite reserves with deposits of about 3 bn tonnes or 5% of world deposits while its share in world aluminium capacity rests at about 3%. However, the per capita consumption of aluminium in India is abysmally low at under 0.6 kg as against nearly 20 kgs in the US and Europe, 15 kgs in Japan, 10 kgs in Taiwan and 4 kgs in China, which implies significant potential for the sector.



One of the key players in the industry is Indian Aluminium Company Ltd. (INDAL).

Headquartered in Kolkata, INDAL is part of the Aditya

Birla Group (a 6 BUSD conglomerate with global operations and a market cap of around 5 BUSD) and is recognised today as a leading player in the Indian non-ferrous metals industry. INDAL is a key partner to Hindalco, a Group company, which holds over 96% equity in the company.

Established in 1938, INDAL operates across the value chain from bauxite mining, alumina refining, and aluminium smelting to semi-fabricated products of sheet, foil and extrusions as well as aluminium scrap recycling. A nationwide spread of plants, mines and offices gives INDAL the advantage of being in proximity to various regional markets within and outside the country. A majority of INDAL's plants and mines have ISO 9001, ISO 14001 and OHSAS 18001 certifications, emphasising the company's focus on quality, environment and health & safety;

and the company has been honoured with several awards for its business performance and social responsibility. INDAL has been growing both its top and bottom line at a steady pace. The company clocked Sales & Operating revenues of 17875 (MINR) in 2003-04, including an export of 4719 MINR to 35 countries with a Profit After Tax of 1322 MINR. This growth has been assisted by record production at its major plants in Muri, Belgaum, Hirakud, Belur and Talaja.

We spoke to Mr. S Majumdar, Jt. President, Engineering, Projects & Materials Management at Kolkatta, for some insights into the industry, the company's present portfolio and future vision, the role of automation and their ABB experience. Here are the main excerpts from the discussion.

The metals sector is certainly on the move in India, be it ferrous or non-ferrous. The aluminium industry has also seen a surge in recent times. Indian aluminium producers are among the lowest cost

producers in the world because of abundant bauxite reserves and access to labour at competitive costs, which give them a significant advantage over their international peers.

INDAL's operating units are broadly divided into Chemicals (including mining), Metal (including Power) and the downstream units of Sheet, Foil & Packaging and Extrusions. The company has an alumina production capacity of around 480,000 tpa. With exports rising, this is a fast growing business for the company, especially in special grade alumina. Many overseas plants are closing down as they are not cost competitive any



Personal Profile – S Majumdar

Mechanical Engineer, Jadavpur University, 1969 batch

Started his career with Titaghur Paper Mill

1970-81 INDAL – first stint

1981-83 Overseas assignment – to set up a new aluminium plant in Malaysia

1983-88 India Foils

1988 Rejoined INDAL as Project Manager; 1994 moved to Belur as Works Manager; 1997 moved to Corporate Office as Chief Engineer; Present assignment Jt. President, Engineering, Projects & Materials Management

Hobbies: Photography, travel, light vocal songs & Indian classical instruments (eg. Sarod, Sitar)

longer. We are entering new markets like USA, China and West Asia. Our sister concern, Hindalco is the lowest cost metal producer in the world thanks to the low cost power they generate for captive consumption. So while their focus is more on metals, ours is more on alumina. Thanks to the merger, we are now able to maximize our synergies. Combined, we are now a global force with a surplus in metal and alumina and products. We are presently in the process of expanding our alumina capacity at Muri near Ranchi from 120000 to 500000 tpa and in Belgaum from 360000 to 650000 tpa. This will give us a composite alumina base of over one million tonnes.

INDAL has a metal capacity of 65000 tpa at its Hirakud operating smelter in Orissa, which is being expanded to 100,000 tpa. This is supported by a 67.5 MW captive power plant to which we are adding additional 200 MW. Our products from this division include rolling ingots, pigs & billets, cast coils, carbon electrode paste and carbon blocks.

When it comes to sheet, we have a rolled products' capacity of about 90000 tpa with one fourth of the business volume meant for exports. Recent forays in this business include China, Europe, Africa and other countries in the Indian Ocean rim. The sheet rolling mills are located at Belur (West Bengal) and Talaja (Maharashtra). Our Continuous Caster at Hirakud, provides continuous cast coils for Belur's SMS Cold Rolling Mill (CRM). Modernisation and process automation improvements have given our sheet plants a technological advantage and are helping us meet more stringent customer specifications. Major products and applications for sheet include lithographic sheet, foil, lampcap stock, closure stock, sheets for bus bodies, fan blades, auto and air-conditioner finstock, cablewrap, tagger foil for lids and insulation coils for power plants.

INDAL is also a leading player when it comes to plain and coated foil and foil laminates for applications such as processed foods, pharmaceuticals, cigarette and dentifrice industries. The company has a foil & packaging capacity of 9000 tpa and in the face of sluggish demand and



price pressures in this segment, INDAL is focusing on high value added areas like light gauge, flexible laminates and pharma packaging. Exports to new territories in Asia are also helping improve volumes and realization. Our foil plant at Kalwa (Maharashtra) is equipped with rolling mills with latest microprocessor based gauge control system to ensure world-class rolling of foil and state-of-the-art converting equipment. Likewise, our Kollur unit in Andhra Pradesh has one of the country's best universal rolling mills. Major products in this

segment include web-stock for dentifrice packaging, printed blister packs for pharma packaging and a host of multiply laminates for oral rehydrates, contraceptives, confectionery etc.

INDAL Extrusions operating from

Alupuram (Kerala), with a capacity of 8000 tpa, offers a wide range of alloys and shapes for applications such as defence bridges, automobiles, truck bodies, textile spindles, marine and other electrical as well as industrial applications. As INDAL expands its domestic and overseas business and develops additional capacities and new products we are clearly focusing on enhanced productivity and efficiency as well as quality, consistency and safety. This is driving our need for automation technologies, which also help us reduce dependence on manual operations, increase control on our processes, interface with ERP systems and assist with data acquisition, storage and application.

Our association with ABB goes back a long time and they have provided automation, controls and electricals for several of our projects, both new and upgrades. At the outset, our experience of working with ABB has been excellent. I would particularly compliment them for their technology, quality, competitiveness, delivery and execution abilities. We found them to be flexible and adaptive and we have strong confidence in ABB's personnel, especially when it comes to living up to their commitments. At the same time we would urge the company towards faster response at the pre-order stage and increased focus on ongoing product support, especially when it comes to spares and service which are vital for us.

Bringing power to the people

Reliable power grids are the result of a partnership between governments, electric utilities, consumers and the providers of the all-important technology that generates, transmits and distributes the power efficiently. Through a country's power infrastructure veins, flows its lifeblood – energy that is essential for the efficient running of our homes and offices, our factories and airports. Much of our future prosperity will depend on how we take care of this.

Modern power systems are the result of continuous development and improvement which, over the years, has led to highly sophisticated and complex technologies. Their reliable operation is a tribute to the work of dedicated scientists, innovative engineers and experienced business leaders.

Invention and innovation are a 120 year heritage at ABB, the pioneer of many of the key technologies on which the power industry is founded. This includes the world's first three-phase power transmission system and the first self-cooling transformer. ABB also pioneered HVDC technology and celebrated '50 years of HVDC' with key customers this year. It is this pioneering spirit that still drives ABB today. Recent breakthroughs include HVDC Light™ technology, which extends the economical power range of high-voltage direct current transmission down to just a few megawatts and opens up new possibilities for improving quality in power grids. Utility and industrial customers around the world rely on proven power technologies, researched, developed and made by ABB.

ABB's strong commitment to research and development and continuous improvement programmes test the physical limits of current interruption and high-

voltage insulation, or the application of semiconductor switching in our power electronics devices. In addition to device-oriented R&D, ABB also looks at the 'big picture'. An example is our wide area approach to monitoring power system dynamics and network stability. Engineering tools have been developed to analyze a complete grid in a very short time, and propose significant improvements.



The power grids of the 21st century must incorporate high-end technologies if they are to meet all the challenges that lie ahead. The blackouts of 2003 have served notice on the utilities, and demonstrated to the wider public, that power grids are vulnerable. In

many countries, deregulation has all too often undermined the will to make necessary investments in high-end technologies.

A first step towards correcting this situation would be for regulators to offer investors, such as utilities and developers, special incentives that encourage them to install technologies which can be implemented quickly and increase the robustness of their transmission grids.

In addition, quality standards for the power supply are needed to ensure power reliability and security. ABB is ready to give its best: proven technology. But beyond superior power products, systems and services, there is another decisive contribution that ABB can make: speed.

Short delivery times, guaranteed by a commitment to being fastest in everything we do, are in keeping with the prevailing sense of urgency. Power consumers around the world do not want to wait, and should not have to wait, one moment longer for reliable power supply.

– Peter Smits
Member – Executive Committee
Head of Power Technologies Division, ABB Group

In this issue of CONTACT, we give you a macro picture of ABB's technology, systems, solutions and service offering in bringing power to the people, from generation, through transmission and distribution. We give you a glimpse of ABB technologies which, help ensure network stability and prevent power systems collapse. ABB has the ability to supply the utility industry with all parts of its infrastructure, to help ensure that electrical energy, upon which we depend so much, is available safely wherever and whenever it is needed.

bringing power to the people

High Voltage Products from 50kV to 800kV

- **Circuit breakers and systems:** Circuit breakers with live and dead tank designs, gas insulated HV switchgear, generator circuit breakers, HV switchgear modules, isolated phase bus ducts
- **Instrument transformers:** Oil filled current transformers and optical current transformers, capacitor voltage transformers, grading capacitors above 100 kV, coupling capacitors and combined current transformer / potential transformer metering units. Special current transformers for series capacitors and HVDC applications
- **Capacitors units / banks, reactive power compensators and surge arrestors**
- **Disconnectors**
- **Power line components:** Poles, lattice towers and accessories
- **Cables:** Solid-dielectric AC/DC power cables, submarine cable systems and accessories

Medium Voltage Products 1kV to 50kV

- **Indoor and outdoor SF6 and vacuum circuit breakers** and other switching equipment including re-closers, disconnectors, fuses and contactors
- **Switchgear:** Air insulated / gas insulated switchgear, motor control centres and ring main units for primary and secondary distribution
- **Modular systems:** Prefabricated modular solutions (unitised and compact substations) for power distribution applications like distributed generation, marine, heavy industries etc.
- **Instrument transformers and sensors**
- **Vacuum contactors**

Power System Consulting

- Power system studies for power transmission and distribution improvement – grid security, reliability and expansion / reinforcement
- Power system studies for industrial plants to help reduce outages and unwarranted blackouts
- State-of-the-art intelligent tools and software for power system analysis

HVDC Systems

- Turnkey HVDC and HVDC light transmission and distribution systems
- Converter stations
- System retrofit through upgrading, uprating and major retrofit of converter stations
- Transmission of power over long distances through overhead transmission lines and submarine cables
- Interconnecting separate power systems where traditional AC current connections cannot be used

Flexible AC Transmission Systems (FACTS)

- FACTS covers various technologies for enhancing the reliability, capacity and flexibility of power transmission systems. Applications include:
- Power flow control
 - Grid stability and effective damping of inter regional power oscillations
 - Reactive power compensation and power conditioning

Composite AC Transmission & Distribution Systems

- Transmission systems
- Rural, urban and industrial electrification (including railways)

Power System Services

- Repair, support, optimisation and maintenance activities
- Asset management and service contracts
- State-of-the-art intelligent tools for switchyard equipment diagnostics - CALPOS-Main programme for Reliability Centred Maintenance (RCM) of transmission and distribution networks. Latest measurement techniques for Recovery Voltage Measurement (RVM), C and Tan delta measurement, Sweep Frequency Analysis and Leakage Current Monitoring (for Lightning Arrestors) etc.

Communication Systems for Utilities

State-of-the-art voice and data communication systems for utilities including teleprotection. Total solutions for long distance transmission including design, system engineering, testing, training, installation and commissioning of:

- Power line carrier communication systems
- Fibre optic communication systems
- Microwave communication systems

Power Plant Solutions

- Instrumentation & control
- Electrical balance of plant
- Boiler control
- Burner management
- Condition assessment
- Combustion management
- Service and repair of generators
- Environmental monitoring
- Excitation systems and automatic voltage regulators
- Plant management & optimisation
- Power plant optimisation
- Substations
- Turbine automation
- Resource scheduling
- Training
- Generator control relay panels

Transmission & Distribution Substations

Turnkey solutions – engineering, design, supply, installation and commissioning.

- Substations for utilities and industries including engineered packages
- Air insulated, gas insulated and mobile substations
- Upgradation, optimisation and retrofitting of existing substations
- Customised solutions

Substation Automation

- Protection, control and monitoring for efficient operation and maintenance of substations
- Integration of substation equipment for control and monitoring and connecting protective relays for parametrisation and evaluation
- Different protocols such as SPA, MODBUS, IEC etc. to integrate third party IEDs (Intelligent Electronic Devices)
- Metering, energy calculations and load pattern studies
- Frequency based islanding solutions
- Industrial energy management systems

Network & Distribution Management Solutions

- Comprehensive range of integrated solutions for efficient and reliable management of electrical utility networks from generation, transmission & distribution to energy markets.
- Supervisory Control & Data Acquisition (SCADA) and Distribution Automation systems
 - Distribution management systems
 - Load management
 - Energy management systems
 - Asset management systems
 - Automated meter reading systems
 - ABT (Availability Based Tariff) metering solutions
 - Volt – Var control systems
 - Automated mapping & facilities management systems
 - Consumer indexing and asset mapping
 - Trouble call management systems
 - Work management – crew & resource management
 - Utility data warehousing

Wind Power Solutions

- System analysis and feasibility studies
- Windpark inter-turbine cabling
- Windpark substations 20 - 36 kV / 150 - 220 kV
- AC and DC Power transmission system
- HVDC systems
- Cable delivery and laying
- Compensation (AC) and filter equipment
- Control and protection system for electrical networks including SCADA system
- Power and control cabling
- Installation and commissioning of electrical networks / components
- Service and maintenance

Railway Electrification

- Traction / converter transformers
- Railway circuit breakers
- Inverters for traction motors
- DC battery chargers
- SCADA systems

Power Transformers (72.5 to 800kV)

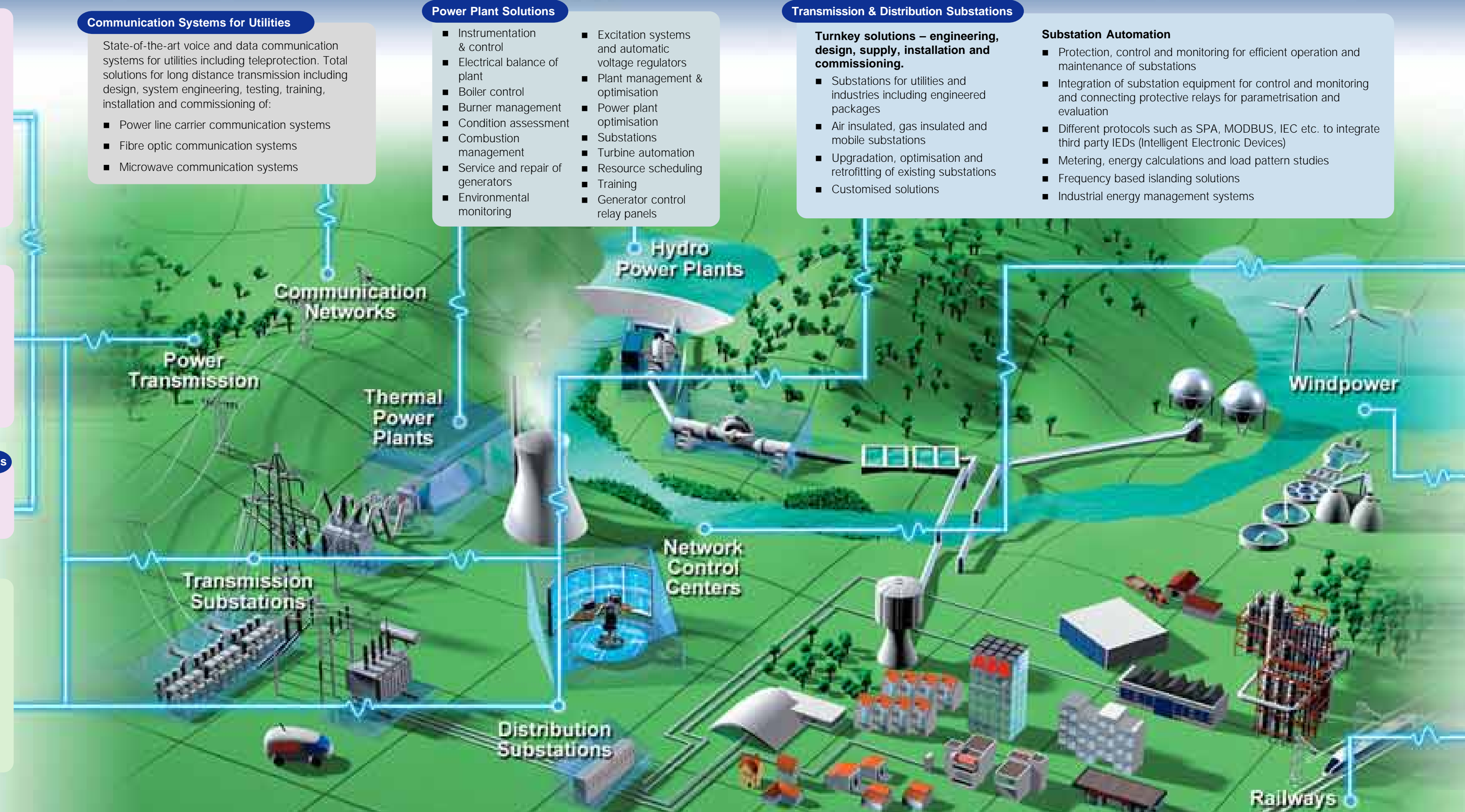
- Large/medium/small power transformers
- Generator step-up transformers, net coupling transformers, phase shifting transformers, HVDC
- Converter transformers
- Shunt reactors
- Made to order electric components and insulation industrial transformers including transformers for high-current capacity industrial processes like aluminium electrolysis / arc furnaces and large drive systems
- Repair and engineering support

Distribution Transformers (up to 72.5kV)

- **Oil type:** Three / single phase small/ medium/ large transformers for indoor and outdoor applications including pole mounted transformers
- **Dry type:** Vacuum cast coil: winding protection for demanding applications including Resibloc® – resin encapsulated transformers that are resistant to mechanical stresses associated with heat and short circuits
- **Special applications:** Pad mount transformers, reactors, transformers for variable speeds, Boosterformers™

Transmission Protection

- Products / solutions for complete protection of power systems from generation to consumption including protection and control products like intelligent terminals with built-in disturbance recorder and fault locator, single function relays and breaker terminals. Offering includes:
- All-or-nothing and measuring relays
 - Bus and breaker protection
 - Protection & substation automation
 - Generator protection
 - Line protection
 - HV line distance protection relay
 - HV/EHV line differential protection terminals
 - Multi-purpose and special application protection
 - Transformer protection



Some significant international projects undertaken by ABB

Golden Valley Electric Association Inc., GVEA

World's largest Battery Energy Storage System (40 MVA)

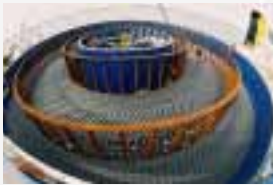


The world's largest battery system, which went into operation in Alaska in 2003, relies on ABB converter technology. Such systems bridge the time between power cuts and the startup of emergency power generation. Alaska's new battery is designed to provide 40 MW of electrical power for 15 minutes.

The energy storage system includes a massive nickel-cadmium battery, power conversion modules, metering, protection and control devices and service equipment.

Murraylink Transmission Company Pty

220 MW, 177 kilometer under-ground high-voltage interconnector



The Murraylink Transmission Company Pty awarded a contract in December 2000 for the turnkey engineering, procurement and construction of the Murraylink Transmission Interconnection

Project in Australia. The contract included two complete AC/DC converter stations interconnected by a pair of underground DC cables, a new substation and AC cable interconnections from each converter to the nearby AC switchyard. Murraylink provides a new directly controllable interconnection between the electricity market regions of Victoria and South Australia. The link is used to transfer power in either direction in response to market price differences. Reliability of the Riverland area electricity supply, which is in the vicinity of Berri, is also vastly improved by the introduction of Murraylink.

London Underground Limited

Improvement of power supply



Five ABB Static Var Compensators (SVCs) and 10 Harmonic Filters have been installed at critical points of the London Underground 22 kV distribution grid enabling London Underground to draw all its power from the National Grid and facilitating the closure of its ageing Lots Road power station. ABB equipment has been optimised to smooth load fluctuations and reduce harmonic disturbance on London Underground's two power distribution networks, at 22kV and 11kV, which provide power to 158 delivery points. The London Underground serves 270 stations, over 250 miles of track.

American Electric Power, AEP

The Eagle Pass 138 kV substation – FACTS interconnection between the USA and Mexico



ABB has installed a Back-to-Back Light installation rated at 36 MVA at 138 kV in the Eagle Pass substation, executed jointly by EPRI, AEP and ABB.

Back-to-Back Light is based on Voltage Source Converter (VSC) technology, using IGBT (Insulated Gate Bipolar Transistor) as a solid state switch and Pulse Width Modulation (PWM) switching technique. The tie comprises two VSCs coupled with a DC link. Each converter is connected to the respective AC grid via air core phase reactors, two shunt (6 MVar) high pass filters, and a stepdown transformer.

The control and protection system installed is fully redundant and based on a state-of-the-art industrial PC platform and utilises international industry standard serial communication interfaces to local I/Os and to an RTU for remote access.

The tie provides unprecedented operation capability, controlled bidirectional power transfer and voltage control at the U.S. and Mexico sides. The tie can be operated either to transfer 36 MW active power, full reactive power support of +36 MVar (STATCOM functionality) at the two ends of the Tie, or a combination of active and reactive power within the range of 36 MVA.

Three Gorges Project Corporation

HVDC link from Three Gorges hydropower plant in central China to Changzhou



An HVDC power transmission link between the Three Gorges dam and Changzhou in China successfully completed all trials in 2003, and has the capability to operate at power levels of up to 3300 MW. In 2004 ABB was

awarded the converter stations for the second 3,000 MW HVDC transmission to Shanghai, that will go into operation in 2007. ABB, will also build a 1,100 kilometer long, 3,000 megawatt (MW) high-voltage direct current (HVDC) transmission link, under the terms of the contract awarded by the State Grid Corporation in China.

The Three Gorges Hydroelectric Power Plant will be the largest of its kind in the world. It will consist of 26 generating units, each with a rated power of 700 MW. The total generating capacity of the plant will be 18.2 GW. After all these units are commissioned in 2009, 6 more units will be installed in an underground power house and the total capacity of the plant will then become 22.4 GW.

Some significant projects undertaken by ABB in India

Powergrid Corporation of India Ltd., PGCIL

Raipur-Rourkela 400kV double circuit AC power tie line



Supply and commissioning of state-of-the-art FSC (Fixed Series Capacitors) and TCSC (Thyristor Controlled Series Capacitors) solution at the Raipur end of the line. The technology will enhance the

power transfer capacity of the line and enable a higher volume of power transfer from the power surplus Eastern region to the deficient Western region and help improve stability. This is the first commercial TCSC installation in India and only the sixth in the world. The site also includes the largest capacitor installation (930MVAR), the largest capacitor bank size of 131.4 MVAR (in the FSC installation) and the highest unit current for a capacitor bank of 133A (in the TCSC installation), commissioned in the country so far.

Karnataka Power Transmission Corporation Limited, KPTCL

Rural electrification, Karnataka (APDRP Project)



The scope of ABB's turnkey solution included engineering, supply, erection testing and commissioning of HV 11kV overhead distribution lines (1157kms), LT 433kV overhead distribution line (265kms), LT capacitors for power factor

improvement, 25kVA distribution transformer centres (1326 nos). The extended benefits to the customer included reduced distribution losses, improvement in availability of power at the consumer end and improved revenues. This is the 1st project to be commissioned in the Gol APDRP scheme.

Maharashtra State Electricity Board

Integrated District Power System Improvement Project, Pune



The scope of Japanese Bank for International Co-operation (JBIC) funded project includes supply of total 20 Nos. 220KV, 132kV, 33KV & 22KV substations and associated transmission lines.

The project was executed through Rural Electrification Corporation Limited (REC).

Andhra Pradesh Central Power Distribution Company Limited, APCPDCL

City SCADA for twin cities of Hyderabad and Secunderabad



ABB's scope included state of the art SCADA (Supervisory Control & Data Acquisition) system to monitor and control the power distribution network for the twin cities of Hyderabad and Secunderabad. The project scope encompassed design, supply, erection & commissioning of the SCADA system with a control centre at Erragadda, Hyderabad for centralised control of 132 kV and 33 kV substations in and around Hyderabad and Secunderabad enabling complete management of power supply to serve consumers more efficiently.

Powergrid Corporation of India Ltd, PGCIL

Vizag II HVDC back-to-back Interconnector III system



Design, manufacture, deliver, erect, test and commission all equipment including thyristor valves, converter transformers, control and protection systems and AC filters. The converter transformers will be supplied from

ABB India's state-of-the art 400 kV class transformer factory located in Vadodara. The Vizag II High Voltage Direct Current (HVDC) back-to-back East-South Interconnector III system, to be installed besides an existing HVDC station will increase capacity for high-voltage power exchange between the two power grids by 500 MW. This interconnection will contribute to PGCIL's phased development of a national grid.

Public Establishment of Electricity for Generation & Transmission, PEEGT

Turnkey project for six substations



The scope of the project includes six new 230/66/20kV substations including design, procurement, manufacturing & supply of equipment for all the substations. ABB's multi-product equipment supply will include power transformers, instrument transformers, outdoor circuit breakers, medium voltage switchgear and control & relay panels. The project is financed by the European Investment Bank and will help in substantially improving power supply.

Global Round-up

ABB to automate China's longest crude oil pipeline

Sinopec has chosen ABB to automate the new 840-kilometer Ningbo-Shanghai-Nanjing pipeline – the longest crude oil pipeline in China. Rapid delivery, supplier reliability and extensive local resources were some of the reasons why Sinopec selected ABB.

ABB will supply an Industrial^{IT} SCADA automation system for the entire pipeline, including remote control centers, control systems for seven pump stations and six block valve stations, RTU's, a pipeline emergency shutdown system, a pipeline model, and an operator training system.

On completion the conduit will pump up to 20 million tons of imported crude a year into China's industrial heartland.



Recently ABB designed and delivered a pipeline automation system for PetroChina's 460-kilometer pipeline in a record nine months.

World's biggest LNG plant to be powered by ABB

ABB is supplying a complete power distribution system for the world's biggest liquified natural gas (LNG) processing plant at the giant Sakhalin II oil and gas field in the Russian Far East. Developed by Shell, Mitsui and Mitsubishi, it will be one of the largest investment projects ever undertaken in the world.

ABB will supply a complete electrical power distribution system for the plant, including engineering and project management in line with Shell's design and engineering practice, as well as automation and telecommunications equipment - from offshore platforms and pipelines to the LNG plant and the two ports from which the liquified gas will be exported.



The plant, which is scheduled for completion in 2008, will supply almost 10 million tons of LNG a year to neighbouring

Japan and other countries in the booming Far East market, where LNG is an important source of energy.

State-of-the-art power plant automation

Intermountain Power Service Corporation (IPSC) has chosen ABB to implement a state-of-the-art control system for its 1,800 MW coal fired power plant in Utah in USA. ABB's distributed control system (DCS) will integrate those aspects of the existing system that IPSC wanted to retain with ABB's IndustrialIT platform – an open architecture that will enable IPSC to remain on the cutting edge for years to come. IPSC operates a 2x900 MW coal fired power plant on behalf of 36 municipal and cooperative utilities in Utah and



southern California. The IndustrialIT based solution will also ensure very reliable plant

operation and reduce operating and maintenance costs for years to come.

The winner takes it all



ABB scientist Charlotte Skourup, 34, has been named one of the world's top 100 young innovators by the Massachusetts Institute of Technology's Technology Review for her research in developing software that simplifies and improves the way human beings interact with machines.

Technology Review is an MIT publication which features articles about emerging technologies and their impact

on the world. It annually names 100 scientists under 35 whose research is expected to shape the way people live and work in the future.

Skourup was nominated from a list of 650 candidates based on her innovative approach to the study of human-machine interaction. For example, she employs augmented reality and visual feedback to help skilled human operators more efficiently programme robots for industrial painting and other manufacturing tasks.

Peter Isberg, an ABB corporate research scientist in Västerås, Sweden, was awarded the Thuréus prize in August this year by The Royal Swedish Society of Sciences at Uppsala for his work in nanotechnology. He is the first industrial scientist to receive the 2004 Thuréus prize in Physics/Mathematics for "distinguished

research and development within material physics and nanotechnology." The Thuréus prize is given to scientists whose careers demonstrate outstanding achievements and promise, and includes a cash award. Every second year, the Celsius gold medal is awarded to a renowned outstanding senior scientist.



The 'evergreen' strategy

For power grid operators it pays to keep equipment and knowledge up-to-date

Marina Öhrn, Claes Ryttoft, Tommy Carlsson

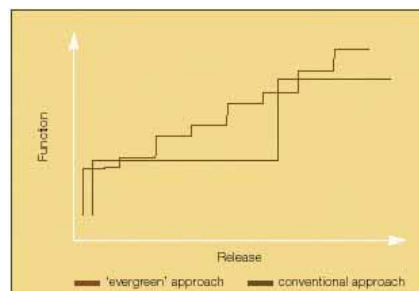
In the wake of the major power outages in North America and Europe, reliability is once again the watchword in the electric power industry. The utilities and other organisations charged with overseeing regional power grids are re-examining how they manage the components that make up their systems. Supervisory Control and Data Acquisition (SCADA), Energy Management (EMS) and Distribution Management Systems (DMS) are all of particular interest, especially from an ongoing maintenance standpoint. As a leading global provider of SCADA/EMS/DMS functionalities with its Network Manager™ system, ABB has developed a comprehensive service programme aimed at maximising the performance of these critical systems while reducing overall lifecycle costs.

The Brain of the Power Grid

If the physical transmission system is akin to a body, then Network Manager™ is its brain and central nervous system. Its functionalities are embodied in highly complex monitoring and control systems with a variety of specific applications, all working to keep power flowing and to preserve the balance between generation and consumption. If a problem occurs here, it can affect the entire grid. This was illustrated by the August 14, 2003 outage in the U.S. and Canada, where one of the contributing factors to the blackout was the failure of an EMS component known as the state estimator. As reported by the New York Times, *"In the 65 minutes during which a sequence of power*

failures built up to a cascading blackout... the regional [grid managers] took no active steps to stop the progression, largely because they were unable to see the full extent of it."

The implications of even minor malfunctions in these systems can be far reaching. Fortunately, new computer technologies have done



1. The 'evergreen' approach to upgrading as compared to a more conventional method with fewer but larger changes.

much to prevent such problems from occurring and to mitigate their effects when they do. However, this is a double-edged sword: As programmes grow more complex, the high-tech systems that preserve the integrity of the grid also become increasingly susceptible to the vagaries of software. Not surprisingly, power system operators are placing a higher premium on service contracts than ever before. When it comes to performing 'brain surgery', it's best to have an expert nearby.

Service as a system component

Given the critical nature of SCADA/EMS/DMS systems, it's not surprising that ongoing

maintenance agreements make up an integral part of the product as a whole. Indeed, in terms of importance, service agreements can be viewed as on par with the hardware and software they support.

Traditionally, however, these systems have been supported by a case-by-case approach to software maintenance. While the service agreement might cover call centres and similar user-support functions, the programme itself would remain largely unchanged over the course of its life, save for bug fixes or other minor code changes required to keep it running according to the original specifications. If the customer wanted to add new functionality, he would most likely have to pay for it through costly change orders. In practice, this approach has led to a situation in which the gap between the needs of the customer and the capabilities of the system grow wider over time until it reaches a point where it becomes necessary to replace the system entirely.

Under the traditional service model, the focus is primarily on supporting the user. This is an important and necessary function, but neglects the ongoing maintenance of the product itself. Given the pace of technological advance, this can render a SCADA/EMS/DMS system outdated within a few years and obsolete after ten years. A wider 'maintenance' concept includes keeping pace with available technologies and matching system capabilities to meet customer needs.

The 'evergreen' approach

The alternative to serial change orders is to have software upgrades built into the maintenance agreement. This way, the customer pays a regular and predictable amount and in exchange is supported by an ongoing upgrade regimen. The vendor adds new functionality,

streamlines processes and makes other enhancements to the software. The customer is assured the most up-to-date system.

⁽¹⁾ compares the 'evergreen' approach to a more traditional method with larger but fewer steps. This is the essence of ABB's approach to service. The overarching objective with this so called 'evergreen' model is to extend the life of the Network Manager system while preserving its value along the way. There are several specific benefits, most of which have direct economic implications for the system owner. The following sections describe these briefly and provide simplified breakdowns of the associated cost savings (the qualification of cost is specific to each power company).

Access to experts

This is probably what first comes to mind when one talks about support: system experts made available by the vendor either from the factory or onsite. Applying the expertise of these experienced individuals significantly reduces the time it takes to solve a given problem.

Assuming:

- 10 full time employees are working with the system (operators, engineers, service people, etc).
- The average cost of these employees is \$ 100k per year.
- Having access to experts will save 15 days of work per year for the team.

The system operator can expect to save: 10 people \times \$100k/year \times 15/200 days/year = \$75000/year

Guaranteed response time

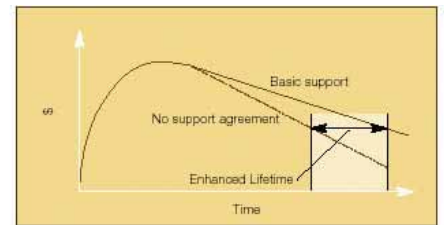
Depending upon the parameters of a given maintenance contract, the vendor is committed to providing assistance within a given timeframe. The sooner a problem is addressed, the less downtime the customer

experiences and the less it will cost. The large savings potential lies in keeping the supply lines open, which in turn keeps revenue flowing. However, additional savings are also readily available:

Assuming:

- The system operator can save 72 hours/year in downtime under the given maintenance scheme.
- The given system has a value of \$3 million.

The system operator can expect to save: 72 hours/year \times \$3 m / 8760 hours/year = \$25000/year



2. Basic support enhances system lifetime

Preventive maintenance extends system life

This is perhaps the most straightforward example of the benefits of a good maintenance programme, and indeed is representative of ABB's overall approach to service. Smaller investments in maintenance over the life of the system will not only extend the life expectancy of that system but also avoid larger, unplanned expenditures along the way. ⁽¹⁾ and ⁽²⁾ show the value of this approach. For this example, we will focus on the value of extending the system's lifespan.

Assuming:

- A new system would require an investment of \$ 5 million.
- 6% interest rate.
- Preventive maintenance will delay the need for a new system by 3 years.
- The old system is depreciated.

The system operator can expect to save: \$5m \times 6% \times 3 years = \$900000 over three years or \$300000/year

Evergreen service model retains system value

The examples above do not consider the option of maintaining the current system under a true evergreen agreement, in which upgrades keep the current system functionally competitive with a replacement system. Viewed from this perspective, additional savings can be realised.

Assuming:

- A new system would require an investment of \$ 5 million.
- That new system would be paid off over the course of 5 years.
- The old system is fully depreciated.

The system operator can expect to save: \$5m in new system cost / 5 years = \$1m / year

Functional additions at lower cost

Any SCADA/EMS/DMS system, no matter how state-of-the-art at the time of installation, is bound to require additional functionality over the course of its life. As noted earlier, the costs of making these upgrades under a change order regime can be very costly. See ⁽³⁾.

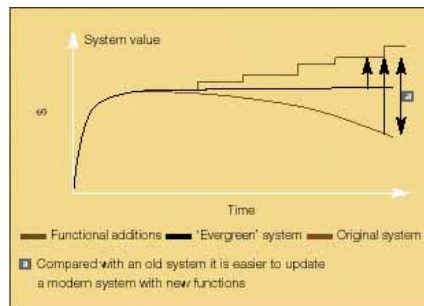
Assuming:

- 3% of the System Value (\$5m) will be added as New Functions every year.
- The cost for implementation will increase by 20 % per year for an old system after one year.

The system operator can expect to save: $3\% \times \$5m \times 20\% \times (3-1)$ years = \$60000 in year three

Additional benefits of 'evergreen' service

Employee turnover and training costs are well documented. Having a functionally up-to-date system in place can reduce these costs by reducing the rate of turnover thereby maintaining system experience. There are also less quantifiable benefits to retaining quality employees. Their experience, built up over years of working with the system, can be



3. Cost-comparison of functional additions under different maintenance schemes

the difference between finding a problem in its early stages and discovering it when it already is causing a serious system disturbance.

Avoiding manual operation, another advantage of the 'evergreen' approach, is desirable for several reasons. The cost of human intervention to otherwise automated processes cannot be overstated. In addition to the immediate cost of re-allocating resources, the organisation must also incur the opportunity cost of what those individuals are not working on while they are dealing with the crisis at hand. Lack of experience in dealing with emergency situations is one significant example of the impact manual operation can have. This deficiency is mitigated to some extent by training using simulated events.

Another advantage associated with the application of an 'evergreen' service model to SCADA/EMS/DMS systems is the flexibility to handle change, which is designed into more modern systems. This is of particular importance as more of the world's energy markets undergo restructuring, placing greater demands on grid operators to keep pace with the impact of shifting power market economics. Utilities that apply the most advanced technology will be better positioned to adapt to operational changes brought on by changes in market structures.

Finally, developing an ongoing relationship with a vendor allows

the operator to influence the future development of the software. Through user groups and interactions with the vendor's staff, they can provide useful input as the next generation of the system is planned and developed. They can also gain valuable insights by sharing their experiences with fellow users. ABB has worked hard to foster the growth of a vibrant user community, and its user group meetings are an important source of information for the company and customers alike.

ABB's 'evergreen' experience

Launched two years ago, ABB's 'evergreen' service model for Network Manager has been adopted by major utilities around the world. In Europe, where the concept was first introduced, many of ABB's customers have signed on to the service including:

- BKK (Norway)
- Elkraft System (Denmark)
- Interelectra (Belgium)
- Göteborg Energi (Sweden)
- Gävle Energi (Sweden)

More recently, Network Manager customers in other locations have seen the value in having an ongoing upgrade program and have signed evergreen maintenance contracts. CFE, the Mexican national grid operator is one example. ABB implemented the world's largest multi-tier SCADA/EMS system for them in 1999. Last year the company signed a four year service contract to ensure the system remains state-of-the-art. The economics of the evergreen service model are hard to refute, as evidenced by the experience of the system operators who have applied it. As the reliability imperative takes on an even higher profile, this approach is well suited to support grid operators around the world.

Source: ABB Review

Living our commitment to Sustainability

Corporate Environmental Responsibility

In an increasingly globalised and networked world, where consumer demands are boundless, costs and pricing are under constant pressure and competition is all pervasive, the wheels of industry are moving at a faster pace than ever before. This 'more and more for less and less' philosophy creates untold pressure on corporates to maximize efficiencies, enhance productivity, streamline their supply chains, optimise their 'input costs', minimize their overheads and 'sweat' their assets to the fullest.

But there is a growing need to balance "doing well" with "doing good". An increasingly aware and environmentally conscious public is demanding higher environmental accountability from the corporate world. Indiscriminate extraction of raw materials, unnecessary wastage, inappropriate disposal of effluents and waste, inefficient energy consumption and pollution are only the tip of the iceberg. The corporate world is moving on from the compliance stage and slowly coming to the realisation that it is no longer enough to have impressive bottom lines and contribute to charities. Besides playing a significant role in shaping reputations and building brand equity, caring for environmental issues also makes 'business sense'.

Businesses can ensure environmental sustainability in many ways, starting with their own products and facilities, ensuring adherence to environmental norms, implementing sound environmental management systems, target resource efficiency, use renewable energy sources and practise recycling. Implementing internal programmes such as rainwater harvesting, water recycling at the plants, effluent treatment, and pollution control are essential. Innovative product designs and production methods can also be a major contributor to reducing environmental impact. On another level, measures such as industry certification, environmental practices benchmarking, aesthetic considerations, greening initiatives, awareness programmes for employees and general public also contribute to environmental responsibility.

ABB is recognised as a global leader in power and automation technologies that enables utility and



industry customers to improve performance, whilst lowering environmental impact. At ABB we follow a comprehensive 'Triple Bottom Line' approach - Economic, Environmental and Social, integrating financial, environmental and social considerations into performance measurement and assessment. ABB strives to reduce its own environmental impact and contribute to eco-efficiency and environmental stewardship in the communities and countries it operates in. Our core businesses offer energy-efficient systems, products and services, which enable our customers to lower their use of energy and natural resources.

Enshrined in ABB's vision is the commitment of living our commitment to sustainability. Sustainability is a distinct function with a global organisation structure, reporting at the highest level. For instance, ABB in India has a dedicated Country Sustainability Controller who reports to the Country Manager. In addition to its multiple social responsibility initiatives, the company ensures environmental compliance and all manufacturing units in India are ISO 14001 certified and some also have the more comprehensive IMS certification (Integrated Management System), with others on the same track. Initiatives like rainwater harvesting, vermiculture and 'green cover' are underway. Tree plantation, island adoption, tree guards etc. are undertaken by the company at all major locations as part of the company's wider environmental engagement. We believe that corporates need to 'earn' the 'right to grow' and realize that environmental responsibility is not just a matter of compliance or merely a 'social responsibility'. It is no longer a 'nice to have' but a 'must have' !

Extract from Business Today, October, 24

Integrated Data Systems (IDS), Kolkata



Based in Kolkata, Integrated Data systems (IDS) and its proprietor Vinod Kumar Agarwal are one of ABB India's leading Channel Partners (CP) in the Eastern region. IDS is a member of ABB India's prestigious **"Presidents' Club"** and its association with the company goes back more than a decade, to 1992. Starting with motors and subsequently adding to the portfolio, IDS now also carries a wide range of low voltage products (eg. Contactors, MCCBs, ELCBs, MCBs, SFUs, etc.) and distribution relays. "I am now looking forward to adding ABB's newly launched range of Electrical Wiring Accessories (EWA products) in the east" says Vinod, enthusiastically. "ABB products presently constitute over 80% of my business volume and we are growing by around 35-40% per annum. In my opinion, this trend is expected to continue in the foreseeable future," he adds.

The IDS business model is based on 'direct sales', to OEMs and institutional buyers, rather than 'counter sales'. Their key customer base includes organisational buyers like the Indian Railways and other government organisations, industries like oil & gas, paper etc., other OEMS as well as small/medium sized clients.

Based on his experience over the past 12 years, what Vinod values most about his relationship with ABB is the quality, technology and breadth of the product portfolio, enabling him to offer a complete

Personal Fact File

- Age 45 years
- Married to Seema for 17 yrs; daughter Sweta (16 yrs) & son Vikramaditya (11 yrs)
- Education: Schooling – St. Paul's, Darjeeling; Bachelor of Commerce – Guwahati
- Grew up in Dumdoona in Assam; Started his electrical business in Tinsukia (10 year stint); moved to Kolkata in 1991
- Hobbies : Big Cricket fan; Hindi movie buff
- Philosophy : "I follow the lifestyle approach 'Khao Piyo Jiyo' – live life to its fullest "
- Business mantra - "personal relationships and networking make all the difference"
- Regular visitor to ABB website and products portal
- Member: ABB India Presidents' Club

'basket'. "ABB is a strong brand and the products are technically superior to most. Being competitively priced, this enables us to convince customers of the value proposition" he says. "Moreover, in recent years ABB has increased its focus on standard products. The image positioning has changed to recognise products and channel partners much more and we see this in the form of our daily interactions, marketing support material, channel partner meets, web support portal etc." he adds.

"As we move forward together, we are extremely optimistic about growing the business. Other parts of the eastern region also have potential and as the range of offering widens, we must consider geographical expansion including areas in the north east. Meanwhile it is important for ABB to continue its focus on quality and competitive pricing as well as continued range expansion," sums up Vinod Agarwal.

JK Automation

Among ABB India's leading system houses in the Eastern region and across the country, Kolkata based JK Automation's channel partner association with ABB goes back to the year 2000, when the entrepreneurial spirit of Javed and Krishna Baig inspired the couple to change career tracks and set up their own business. JK Automation's portfolio of ABB products today, includes drives, control systems (ie. PLCs and DCS), Instrumentation, motors and LV products.

As a team, one can't ask for a better combination. Javed is an M.Tech and took his engineering degree from the University of Rourkee. He worked with Allen Bradley (Rockwell Automation) from 1994 to 1996 and then with Schneider from 1996 to 1998, developing System Houses. Krishna is an engineer from the Indian Institute of Technology (IIT-K). From 1994-1995 she taught 'Process Controls' to engineering students at BITS Pilani. After a five year break, rearing kids (they have two sons Atharva 8 and Roshan 7) she and her husband Javed established JK Automation in 2000.

Sharing their experience of working with ABB, they are extremely complimentary. "ABB as a brand stands for proven technology and quality. We are able to leverage the range advantage and global reputation of ABB as a world leader in power and automation technologies. For a system house, timely and qualified technical support is a vital area, where ABB engineers have



always been a great asset to us," says Javed. "From a business perspective, we have greatly benefited from the company's innovative channel financing programme through leading financial institutions," he adds.

"We are optimistic about future growth and the potential is extremely bright. As our business grows at a rapid rate, we look forward to building even stronger relations with ABB. To help foster this growth, we would seek faster response times and deliveries, stock feeds and higher level system integration support," says Krishna.

When it comes to recognition and accolades, the trophies on the mantle piece tell their own story. JK Automation is a member of the ABB India Presidents Club, having won awards including 'Best System House Eastern Region', 'Best Performer Drives' and 'Best Performer PLC'. They are the only 'globally designated ABB system house for PLCs' in India and also ABB India's highest volume PLC channel partner. Additionally, JK has been given the responsibility for developing the 'Sponge Iron Sector' vertical across India.

Their enthusiasm and entrepreneurial spirit is clearly summed up when they add in unison "Managing growth is our biggest challenge today. We are shortly moving into new dedicated premises, so that we can put our operations under 'one roof' and control things better !"



Can I have more information on on-load tap changers (OLTC) used in the LV side of a transformer?

P Samanta, Reliance Energy Limited, Kolkata

ABB manufactures 3 types of OLTCs for three different voltage ranges - 72.5 kV / 50 MVA, 245 kV / 1000 MVA and 145 kV / 80 MVA (with motor-drive mechanism). All tap changers are manufactured and tested in accordance with industry standards such as IEC 214 and IEEE

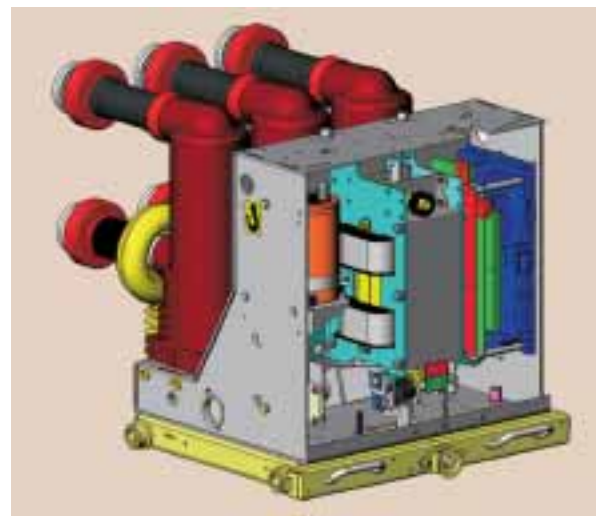
C57.13.131. ABB OLTCs undergo routine tests such as dielectric testing of Type UZ phase moldings, transition resistor measurements, transition time between operations, mechanical 500-operation tests and helium seal tests. ABB's active component construction can be either of the diverter or selector type switching principle.



Can I have more information on the installation, maintenance and working of the eVM1 – Magnetic actuator integrated circuit-breaker?

Girja Shanker, Lucknow

The **eVM1** integrated MV circuit-breaker is based on the proven VM1 series of vacuum circuit-breakers with magnetic drive. Current sensors are fitted on the pole contact arms and current signals are cabled directly to the integrated electronic control device on board the circuit breaker. The electronic controller supervises all the circuit-breaker functions, monitors the whole panel status and controls its own functional reliability. A great reduction in wiring and interfaces is achieved since most of the panel functions are hosted on the circuit-breaker. An optional communication module enables monitoring, configuration and full remote control, thereby reducing on-site supervision and traditional secondary wiring. Set of parameters for the protections, communication, etc., can be configured via software. Energy storage monitoring



for Open-Closed-Open cycle, drive coil continuity and system readiness, incorrect positions or incongruous states for the circuit-breaker and panel switch-disconnectors provide advanced self-diagnosis for local signalling on HMI, through binary outputs with traditional wiring or over a communication bus.

Did you know?

You can access all issues of CONTACT on the ABB India website. You can also post your queries on the Web on any topic related to ABB's product, systems and solutions.

www.abb.co.in >> [newscentre](#) >> [printed material](#)



Communicating...

Brochures



Integrated Power Plant Solutions

Power Plant Solutions Thermal

Power Plant Solutions Hydro and mini-hydro

SF6 insulated Ring Main Units and Compact Switchgear

Compact Secondary Substations (CSS)

Line Protection Devices Price List

Standard Product Catalogue

Safety at Offices, Factories and Project Sites

Power Systems Civil Works Procedures

Channel Partner Directory



I hope you enjoyed this 'voltage packed' issue of **CONTACT** where we have attempted to give you a mix of technology and business stories, based on some of the feedback received from our readers. We look forward to your ongoing support, inputs and suggestions, on what you would like to see and read in order to keep our **CONTACT** with you contemporary and relevant.



Harmet S. Bawa, Head GF-Corporate Communications, ABB India

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