1|11

contact

The customer magazine
of ABB in India,
Middle East & Africa

Service-Optimizing assets

Power and productivity
for a better world™

contact 1|11

Biplab Majumder
Vice Chairman and Managing Director
ABB Ltd., India

Dear friends,

The time has come to bid adieu to ABB after having spent over 33 years in this organization. Over the years, I have built strong ties with customers and employees. We have accomplished numerous milestones together and we could only achieve this scorching pace due to our committed employees, our dedicated customers and teamwork together with our global colleagues.

The time has come for me to hand over the baton to Bazmi Husain, who has diverse experience in India and abroad. I am sure that under his dynamic leadership ABB will continue to go places and be an innovator for the market.

The backbone of India's industrial growth and to realize its opportunity of being a global economic powerhouse rests majorly on a strong infrastructure, especially a plentiful, reliable and sustainable power supply. The current obsolete electricity grid needs to be overhauled to make it a real "Smart Grid" which seamlessly maintains an optimized power supply. With the Indian economy on an overdrive, demand from industrial customers is envisaged as with enhanced capacity there is a need for solutions to increase energy efficiency and productivity.

This issue of Contact is also an innovation that we can share. It is a customer magazine encapsulating ABB products, solutions, and commissioned sites spanning the India, Middle East and Africa region. It is representative of the rich tapestry of countries and cultures that is ABB and successes that we share together with our diverse customer community

I am sure that you will find this issue an interesting read.

Yours sincerely,

Biplab Majumder

Contact, Quarterly news magazine from ABB, © 2011, **web:** abb.co.in, **email:** contactmagazine@in.abb.com, **Publisher:** ABB Group,
Design: Adsync, Bangalore, India, **Cover picture:** An ABB engineer at the power transformers workshop in Ludvika, Sweden.

Local News

World of ABB

News & Stories

Cover Feature

Prestige project in focus

Customer Connect

Product News

For a better world

Hybrid switchgear for a floating power plant

PASS module at GMR Energy's switchyard

A 220 kilovolt (kV) switchyard, set up to evacuate power from India's only barge-mounted gas power plant, is equipped with ABB's hybrid switchgear PASS (plug and switch system). GMR Energy's 220 kV floating power plant is on the eastern coast of India. The scope of the turnkey switchyard system included a double bus six-bay 220 kV switchyard with hybrid switchgear, IEC-61850 automation and SCADA enabling solutions.

The floating power plant was earlier located at Mangalore in the state of Karnataka and has been recently shifted to Kakinada in Andhra Pradesh.

As the complete power plant auxiliary units and switchyard are on reclaimed land from the sea, space saving was major factor in this project. The substation also ensures high reliability and maintenance free functioning.

The scope of equipment supply included 220KV PASS hybrid switchgear in double bus bar and single bus bar modules, 220KV current transformer and capacitor voltage transformer, control and relay panels with substation automation system and PLCC (power line carrier communication equipment).

Dry type transformers for MRF

Dry type transformers manufactured in India has won an order from leading tire manufacturer, MRF Limited, Chennai, for their Trichy plant, in Perambalur, Tamil Nadu, a state in southern India. These transformers are K-7 rated dry transformers and are required to meet non-linear loads. K-rated transformers are manufactured with heavier gauge copper and a double sized neutral conductor and have higher magnetic to resistive properties than a standard transformer which enables them to handle the heat generated by harmonic currents.

ABB will supply 19 units of 2000 kVA copper wound cast resin dry type transformers to feed the non-linear loads having severe harmonic percentage in the total connected load.

Dry type transformers have an inherent fire retardant characteristic which make them an ideal choice for indoor installations like in commercial establishments, IT parks, malls and indoor sub-stations. They are compact in size, easy to install and require minimal maintenance.

Dry type transformer

Automating Bhutan's largest cement plant

View of a cement plant

A Greenfield one million tonne per annum (MPTA) cement project in the Kingdom of Bhutan will be equipped with advanced electrics and automation systems from ABB. On completion, the plant being set up by Dungsam Cement Corporation Limited in eastern Bhutan, will be the largest integrated cement plant in the country meeting the cement demand of Bhutan as well as north eastern India.

ABB's scope includes 132 kV substations, 6.6 kV panels, transformers, low voltage switchboard, motor control center, drives, LT, HT capacitors, uninterrupted power supply, erection materials, distributed control system (DCS), complete lab automation, field and special instruments.

Compact solution for a bustling metro

Tata Power, Mumbai's power distribution utility and India's largest private electric utility selected ABB's plug and switch system (PASS) hybrid switchgear, a gas-insulated switchgear module for air-insulated distribution substations that have space restrictions or severe climatic conditions to contend with. It incorporates all the functions of a switchgear bay - circuit breaker, disconnector, earthing switch, current and voltage transformers and SF6 density monitoring equipment - in one single, highly compact pre-assembled and factory-tested module which is a great boon in the crowded environs of Mumbai.

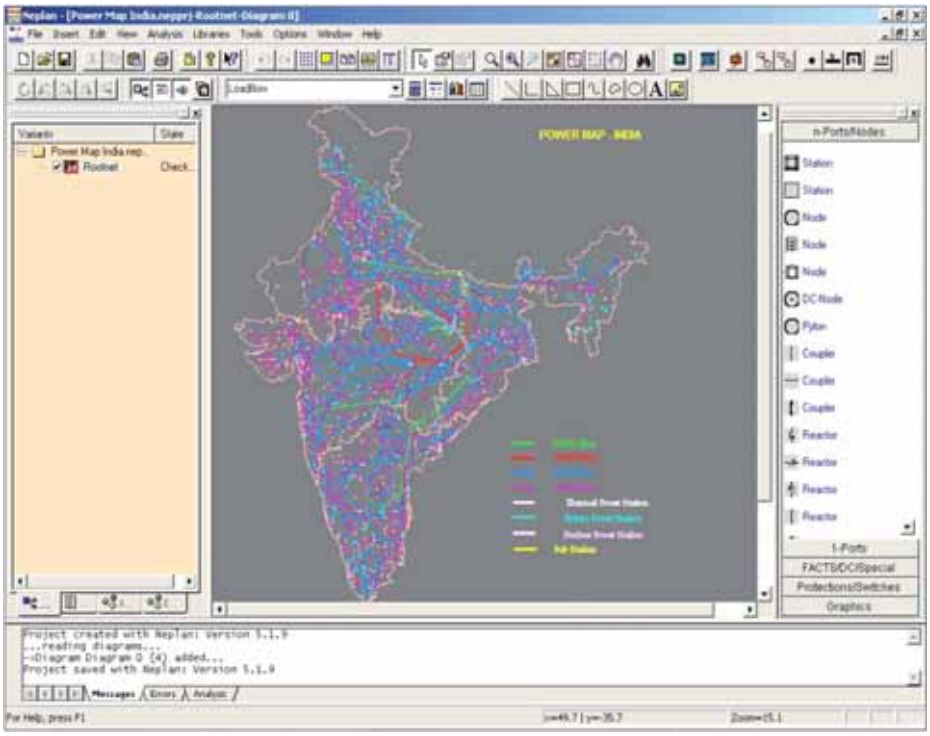
PASS needs less than half the space of a conventional air-insulated switchyard, and can be installed and commissioned in hours. Cost of ownership over the product life cycle is also considerably lower than the traditional approach. For Mumbai, India's most populous city and the commercial, industrial and financial capital of the Indian economy, the technology is a perfect fit since it reduces the footprint for setting up which is of vital importance in a city that has some of the highest real estate prices in the world.

PASS M0 145 kV switchgear module

For Tata Power, ABB initially provided 19 PASS M0 145 kV switchgear modules to boost the capacity and reliability of eight distribution substations in Mumbai.

The installations and results were so successful that Tata Power has ordered an additional four modules for a further two substations.

Building smarter networks



Screen shot of the NEPLAN software

As part of the power sector reform project in the state of Karnataka, the state utilities are implementing projects to improve the IT infrastructure for managing its power network. As part of the project, ABB will supply its NEPLAN® software for the Restructured Accelerated Power Development and Reforms Program (R-APDRP) programme. ABB's scope for the project includes supply of GIS-based network analysis software - NEPLAN® and AMC support for a period of five years after project roll-out.

R-APDRP projects are first of its kind assignments which will empower distribution utilities in India with IT infrastructure to establish their aggregate technical & commercial (AT&C) losses and then aim to reduce their losses.

The objective of the program is reduction of AT&C losses to 15 percent in project areas.

Grid reliability for Central America

High voltage disconnectors from ABB in India will help improve reliability of the grid in Central America. ABB will supply 44 units of SGF-type disconnectors to the central power utility of Nicaragua, Enatrel. This includes 72.5 kV, 145 kV and 245 kV disconnectors configured with and without earth switches. Another set of 32 units of 245kV disconnectors will also be supplied to Costa Rica in Central America. HV disconnectors are substation devices that provide visible isolation to the power network and are designed as per IEC 62271-102 standards.

High voltage disconnector

News

Robots boost plant efficiency

Paint robot: IRB 5400-22

Two 5400-22 robots with integrated process arm and painting systems will reduce paint consumption by 25 percent and lower cycle time by 28 percent for tractors manufactured by John Deere India. The robots, installed at the company's Ranjangaon facility near Pune, will ensure accurate painting, low paint consumption, shorter cycle times and higher uptime. ABB's integrated painting system (IPS) process saves upto 25 percent of the paint by preventing over painting and spillage. It will also lower the cycle time by 28 percent thereby increasing the productivity of the booth from 17 tractors per hour to 24 tractors per hour. The Ranjangaon facility exports tractors to USA, Mexico, Turkey and across Africa and South East Asia.

Transformer clears short circuit test

A 54 MVA, 13.8 / 420 single phase generator step up transformer (GSU) manufactured in ABB's transformer factory in Vadodara cleared short-circuit test at KEMA testing laboratory in Netherlands. ABB will supply 14 units of these transformers for the 520 megawatt (MW) Tapovan Vishnugad Hydro Electric power project being set up in the state of Uttarakhand by India's largest power company National Thermal Power Corporation Limited (NTPC).

The KEMA testing laboratory is a pioneer in carrying out third-party high voltage testing for transformers, circuit breakers and other electrical equipment.

Meeting the rising water demands of a metropolis

ABB products at a desalination plant

An integrated instrumentation, controls and infrastructure (ICE) package from ABB will be a critical part of a desalination project aimed at meeting the rising demands for drinking water in southern India's largest metropolis Chennai, in Tamil Nadu. ABB technologies will be applied to monitor, control and operate a reverse osmosis-based plant with 100 million liters per day capacity.

The ICE package includes energy savings drives and motors, distributed control systems (DCS) as well as plant electrics. Electrical infrastructure being set up to operate the plant consists of a 110 kV substation, medium voltage (MV) and low voltage (LV) switchgear, distribution and converter transformers.

ABB's latest extended automation system 800xA platform will monitor and control entire operations of the desalination plant.

Ensuring safe and efficient power distribution

Ring Main Units (RMUs) from ABB are helping Torrent Power, a leading private sector distribution utility, to improve their distribution network in several ways including reducing the network fault restoration time by half and thereby increasing revenues. Torrent has placed an order of 737 units of 11kV SafeRing RMUs as part of its plan to replace conventional oil type RMUs with more efficient SF6 units.

ABB RMUs score in urban areas due to distinctive features of SafeRing like compactness, front end cable termination, remote access and multiple configuration options. The above along with benefits of enhanced safety and virtually no maintenance requirement has also enabled Torrent Power to go for their unique double storey substations.

Ring main unit (RMU)

Drives to support Kolkata airport expansion

Range of ACS550 drives

A new terminal being set up as part of the expansion and modernization of eastern India's largest airport in Kolkata will soon be equipped with ABB's energy saving ACS550 drives for a new HVAC (Heating, Ventilation and Air Conditioning) system.

The alternating current (AC) drives will run air handling units catering to an area of 40,000 cubic meters and handling a peak flow of 1800 passengers per hour. Use of these drives ensures quantifiable energy savings.

Netaji Subhash Chandra Bose international airport is undergoing a facelift with the commissioning of the new terminal to handle yearly passenger traffic of 20 million.

The Kolkata airport is the largest in eastern India and the fifth busiest airport in the country. The fourth terminal is being built to cater to the phenomenal rise in passenger traffic volume since the last three to four years as well as meet the projected rise in passengers which is envisaged for the future.

Powering the world's longest rail tunnel

ABB is providing the traction power supply system for a new light rail system

The Lötschberg and Gotthard base tunnels are the focal points of a Swiss federal project to cut rail times through the Swiss Alps by constructing base tunnels several hundred meters below the existing tunnels.

To expand its high-speed operations and to perform at the highest levels of efficiency, reliability and safety the Swiss rail network is relying on ABB's expertise. The rail network has the highest frequency of train services in the world and ABB solutions include systems for the 57 kilometer Gotthard rail tunnel, the longest tunnel on the planet.

ABB supplied 50 Hz power distribution system for the entire tunnel infrastructure - lighting, signaling, communications, ventilation and air conditioning – as well as the 16.7 Hz traction power supply system that is designed to power up to six locomotives and freight trains of up to 1.5 km in length simultaneously.

ABB is also supplying a power distribution solution that will provide exceptional levels of reliability, availability and safety in the demanding operating conditions of the tunnel system.

The tunnel system will consist of two 57 km tunnel tubes, one for each direction, linked every 325 meters by 40 m crossways that serve as escape routes. The ABB power equipment is located in these crossways. It has to withstand large variations in pressure caused by trains speeding past at 250 km/h, and unusually harsh operating conditions – salt deposits, brake dust, soot, and abraded material.

The solution includes 875 units of ZX0-type gas-insulated switchgear and 500 units of REF 542plus protection and control devices. The REF 542plus ensures stable and reliable power supply by identifying the type and location of a fault accurately and in the smallest span of time. It combines measurement, monitoring, protection, control and self-diagnostics in a single package.

ABB is supplying traction power supply packages for public transport systems in three of country's most important cities: Zurich, Bern and Lucerne.

World's largest subsea transformer

Testing of the subsea transformer

An innovative ABB technology will increase productivity in Europe's third largest gas field on the floor of the Norwegian Sea.

The largest subsea transformer in the world (20 MVA, 132 kV/22.5) was successfully tested at the port of Vaasa in Finland. The 60-ton device was lowered into the sea for a heat run test under operating conditions that correspond to real ones. ABB is currently the only company in the world that manufactures subsea transformers.

The transformer technology tested in Finland will be used to make a 70 MVA transformer for the deepwater Ormen Lange gas field, depths ranging from 800 to 1,100 meters.

The ABB subsea transformer will be delivered in the fall of 2010 for testing of the entire compressor system and the actual use in production is expected to begin in 2014.

Bridging the power demand and supply gap

A market management system to help balance supply and demand for electricity in the country will be provided to the National Electricity Grid in the United Kingdom by ABB.

The Network Manager™ Market Management System (MMS) will replace National Grid's current system for managing the UK's total electricity demand of more than 55,000 megawatts.

It is a reliable, secure and flexible solution that enables the integration of renewable energy sources. It also improves the performance of applications such as automated dispatch and transmission security, while minimizing the impact on market participants. The solution will support scheduling, real-time management, external interfaces and overall systems integration.

MMS is part of the Network Manager suite offered by Ventyx, which was acquired by ABB earlier this year. Ventyx provides enterprise software, energy markets data and professional services that enable energy, utility, communications and other asset-intensive organizations to optimize operational efficiency and productivity.

National Grid is a leading international electricity and gas utility. It owns the high-voltage electricity transmission network in England and Wales and operates the system across the UK.

Boosting power plant efficiency

Medium voltage AC drives

The energy consumption of two boiler feed pumps at Grosskraftwerk Mannheim AG (GKM) coal-fired power plant in Germany is slashed by 25 percent, using ABB medium-voltage drives. The solution increases plant revenues by $800,000 a year. Before installing our solution, the pumps were controlled by hydraulic clutches, which were operating with an efficiency of only 72 percent and were losing more than 1 megawatt of energy per pump.

ABB proposed a package for each pump comprising an ACS 1000 medium-voltage variable speed drive, a Resibloc® dry-type transformer and a complete overhaul of the pumps.

The improvement in energy efficiency has proportional impact on plant's carbon footprint, lowering its carbon dioxide emissions by 10,200 metric tons a year.

The overall efficiency of the new pump drive system is a near-perfect 98.5 percent, compared to the 72 percent of the previous system.

Following the success of this installation, GKM subsequently awarded ABB two more contracts to install medium-voltage drive systems for the feeder pumps and water circulation pumps at two of the plant's other generating and district heating units.

MV drives at GKM

News

Enhancing power supply reliability

Eletronorte, Brazil's leading transmission utilities is joining hands with ABB for a solution that will help to enhance the capacity and reliability of power supplies in the Maranhão-region of North East Brazil. ABB will design, supply, install and commission an SVC (Static Var Compensation) unit in São Luis, thereby boosting electricity supply through existing 230 kV (kilovolt) transmission lines to improve voltage control and 500 kV system performance during contingencies.

ABB acquires Metsys

In a move to consolidate its presence in the global metals industry, ABB recently acquired Metsys Engineering and Consultancy Private Limited, a key technical solution provider to the steel industry in India, China and other countries in Africa, Middle East and South Asia. The highly skilled team of Metsys will help strengthen ABB's business offering and enhance the capabilities of the in-house research and development center for the metals business. Existing projects and customers of Metsys will be integrated into ABB's metals business segment.

Increasing reliability for RasGas

Preventative and corrective maintenance, spare part management on ABB installed base is provided for all plants of RasGas Company Limited, a premier integrated liquefied natural gas (LNG) in Qatar. ABB will be working together across all divisions to fulfill this service agreement.

This onshore and offshore service includes motors, machines, low voltage drives, medium voltage drives, transformers, medium voltage switchgear, and low voltage switchgear.

Major benefits include preventative maintenance outside of shut down periods ensuring minimal loss of production.

Power saving solutions for Philippines

Control system operator workplace

ABB has provided power saving solutions for the largest power generation facility in the Philippines, KEILCO Ilijan, through the upgrade of distributed control systems.

ABB was recently selected by KEILCO to upgrade the distributed control system (DCS) at what is generally considered the node of the 2x600 MW Ilijan power plant, which is a the gas-to-power project.

We are enhancing the DCS solution while simultaneously protecting the customer's original investment. This will upgrade the operator stations and servers and significantly increase the speed of the network and provide loop segmentation to enable partial shutdown of the plant in planned or emergency situations.

System evolution is fundamental to ABB's control system philosophy. It enables customers to evolve their control systems as needs grow or change, while protecting major system investments like process graphics, control applications and history data.

We are implementing the installation online to minimize the plant shutdown to just final testing and a short planned outage enabling the plant to maintain its target availability of 90 percent.

Remote monitoring for Shell

ABB is remotely operating, monitoring and managing the offshore oil and gas automation systems of two Shell production sites in the Norwegian Sea. This includes the world's largest deepwater gas wells and longest subsea gas pipeline.

ABB Service Environment™ has produced successful response to these challenges at two of Shell's biggest and most complex production sites on the Norwegian continental shelf. The solution enables ABB experts to operate, monitor and manage the sites' automation and safety systems from three dedicated ABB Remote Monitoring and Operations Rooms (ARMOR™) located onshore in Norway.

Through ARMOR and a 24/7 service desk, ABB is able to respond rapidly to field alerts, optimize, upgrade and evolve the systems, and collaborate on projects with Shell and authorized third parties, regardless of where personnel are located.

An offshore platform

ABB Service Environment is widely relied on throughout the Norwegian continental shelf, with companies like ExxonMobil, Maersk Oil, Bideford Dolphin and KCA Deutag all benefiting from the concept.

Automation for sand dune water filtration

Control room using 800xA platform

Dunea is one of the largest water utilities in the Netherlands, supplying 80 million cubic meters of drinking water a year to 1.2 million people.

Dutch water utility Dunea uses ABB's 800xA extended automation platform to transform its aging, multiple-process automation systems into a single system. This system will control and manage the utility's entire water production and distribution operations from one central control room.

The solution is replacing the existing process automation systems at Dunea's five production facilities. Replacing these decentralized systems with a single integrated operations-wide solution will bring Dunea a standard and unified system of process control, besides other benefits.

Dunea is one of the largest water utilities in the Netherlands, supplying 80 million cubic meters of drinking water a year to 1.2 million people in the area in and around The Hague, the third largest city in the Netherlands.

This solution will improve the company's efficiency, reduce its operating and manning costs, and enhance the reliability of its production process to ensure Dunea's customers receive a steady supply of safe and high-quality drinking water.

Helping Electrolux save energy

IRB 2400

An Electrolux production line's energy consumption has been reduced by 15 percent with the help of ABB robotics solution. It has also boosted productivity and production flexibility, improved health and safety and significantly reduced the factory's carbon footprint.

Every second of every day, Electrolux sells two of its products to consumers all over the world and this requires modern and flawless manufacturing facilities and production concepts.

In Electrolux's Adelaide, Australia production site a fully automated production line for powder coating oven and grill interiors (known as cavities) has been installed. Equipped with an ABB robotics solution, the production line has achieved remarkable results in key performance indicators like production flexibility, product quality, rapid return on investment and energy efficiency.

The ABB solution includes four IRB 2400 six-axis articulated robots which coat one oven and grill cavity every 15 seconds with a perfect and consistent powder coating and superior high gloss enamel finish. This makes the cavities smoother and easier to clean and more attractive to consumers.

The new line consumes 15 percent less energy than the old production process. It has eliminated the need for the energy-hungry drying process, reduced water usage, increased productivity and improved health and safety in the workplace.

The customer has placed an additional order a product assembly cell, another ABB robotics solution.

Powering ahead the Bangalore Metro

Bangalore metro coach

ABB's scope of supply includes four 66/11kV main receiving substations consisting of air- and gas-insulated switchgear, 33kV medium voltage distribution network.

ABB in India is providing the power supply system and third rail electrification for phase one for the prestigious Bangalore Metro Rail Corporation Limited (BMRCL) order which is envisaged to provide mass rapid transportation solution to the Information Technology capital, Bangalore.

The Phase I of project comprising of at-grade, elevated and under-ground sections in two corridors namely east-west corridor, of approximately 18.1 km length with 17 stations, and north-south corridor of approximately 24 km length with 24 stations.

ABB's scope includes four 66/11kV Main Receiving Substations consisting of air- and gas-insulated switchgear, 33kV Medium Voltage Distribution network consisting of 38 Auxiliary Substations (ASS) and 27 traction substations. ABB will deliver 78 km of 66kV cables, 590 km of 33kV cables and 38 km double line dc third rail conductor and supervisory control and data acquisition (SCADA) system to monitor and control the complete electrical system.

The two corridors have been divided into different sections and the completion of these reaches have been planned from December 2010 to August 2012.

The East-West corridor from Baiyappanahalli to M.G. Road, consisting of 6 elevated stations including depot at Baiyappanahalli, is scheduled to be commissioned by December 2010.

In India, ABB is the leading Turnkey Electrical contractor for Metro Rail Projects having executed Delhi Metro Rail Projects (DMRC) Phase I and also currently executing DMRC Phase II, Mumbai Metro Line Phase I. ABB's SCADA systems currently monitor and control power for all existing metro rail projects in Kolkata, New Delhi and Mumbai.

BMRCL is the Special Purpose Vehicle (SPV) of Government of Karnataka and Government of India implementing phase one of the Bangalore Metro Rail Project.

The mode of traction is 750 volt direct current third rail and the track will be standard gauge having a breadth of 1435 millimeters. The nodal points for the control consist of an integrated operation control center (OCC) and back-up control center (BCC).

Lighting up the world's largest university for women

Princess Noura Bint Abdulrahman University, the world's largest women-only university, has chosen ABB to implement KNX intelligent building control system at its new site.

ABB's KNX-based technology will allow university facility management to automatically and remotely control lighting and shading through one single interface, enabling significant reductions in energy usage.

As the first green building campus in Saudi Arabia, Princess Noura Bint Abdulrahman University will further the drive for significant cost savings and a lower carbon footprint in the Kingdom's construction sector.

KNX technology automatically and remotely controls lighting

Once completed, the university campus will be of eight million square meters in total, with approximately three million square meters of built-up area. The campus will include an administration building, a central library, conference centers, 15 academic faculty buildings, several laboratories, as well as a 700-bed hospital.

Reliable power for Commonwealth Games

ABB helped ensure reliable power supply to Commonwealth Games village

An ABB solution ensured uninterrupted power supply to the Commonwealth Games (CWG) Village as well as the eastern region of Delhi.

The project was executed for BSES Yamuna Power, a prominent private power distribution player in Delhi. Complete project management, design and engineering along with supply, erection and commissioning of equipments for the substation was done by ABB. The scope included 66/11kV substation with 2 nos. 20/25 MVA power transformer, 5 bays at 66kV and 12 outgoing feeders of 11kV including auxiliary system.

ABB completed this project eight months prior to the commencement of the Commonwealth Games. Moreover the project was performed with 100 percent safe man hours and without causing any interruption to the existing 50 MVA load.

ABB low voltage products like ACB (air circuit breakers), MCCB (moulded case circuit breakers),Contactors and Relays were supplied for internal electrification at Indira Gandhi Indoor Stadium, Talkatora stadium for boxing, Major Dhyanchand hockey stadium, Karni Singh shooting range and Shyama Prasad Mukherjee swimming pool complex. External electrification was done at Chatrasal stadium – the training venue for track and field events. Air conditioning of MDC, Siri Fort auditorium, substation package at Yamuna sports complex. Modular switches were supplied to the Commonwealth Games Village.

Scoring high on power at the World Cup

Dry type transformer

Reliable and efficient supply of power to the two main stadiums of 2010 World Cup soccer tournament in South Africa were ensured by ABB's 26 vacuum cast coil dry type transformers.

Twelve 1200 kVA dry type transformers were installed in the Green Point stadium in Capetown, which has a retractable roof and a seating capacity of 68,000. Fourteen similar transformers in the 500 to 1000 kVA range have been installed in the Soccer City stadium, located in Soweto, Johannesburg. This stadium, with a capacity of around 100,000, was the focal point of the tournament and was the venue for the opening and closing ceremonies and key matches of the tournament.

Control system lifecycle services

Total cement plant view

ABB has introduced control system lifecycle services for Lafarge Cement Egypt, one of the largest cement producers in the Middle East, for their plant in Ain Sokhna. Updating control system software to recent versions and future availability of spare parts along with guaranteed technical support are also ensured for Lafarge Cement Egypt. With its five production lines, the company has now reached a total production capacity of 25,000 tons per day.

Programs for software management and extended software lifecycle support policy through the Sentinel service program were provided. ABB will be working with the company to continuously update planned evolution strategies which will help to secure the installed equipment and protect their automation system investment. The operator stations evolution clearly shows the added value of lifecycle services, reflecting a deep understanding of Lafarge Cement's needs.

The scope of our contribution includes advanced command operator stations evolution to System 800xA, control network upgrade, modernization of the control system interfaces, commissioning by local automation engineers and control system evolution support through the Sentinel program

Through this, Lafarge is ensuring continuous, long term support for critical assets, smooth transition with minimum shutdown window, lower system software lifecycle costs and risks and best overall ROI for software investment.

Profitability through green business

Jumeirah Beach Hotel, the UAE's premier lifestyle destination and leading family resort has proved that green business is good business by installing ABB ACH550 variable speed drives for the hotel's HVAC (Heating, Ventilating, and Air Conditioning) system.

The decision to switch to ABB variable speed drives has helped the hotel reduce energy consumption and become more eco-friendly by reducing harmful carbon dioxide emissions by 35 percent per year and also by reducing the overall energy consumption, resulting in a 35 percent reduction in energy costs.

All the drives are connected to a control system, which is fully integrated into the building management system (BMS). The control system allows all the drives to be controlled by a single user interface, ensuring the operator has one-stop access to all the HVAC drives in the hotel.

Jumeirah Beach Hotel, UAE

Doubling fresh water capacity in Kuwait

Signing ceremony of the Mina Abdullah water pump

Ministry of Electricity and Water in Kuwait for the construction and rehabilitation of the Mina Abdullah water pumping plant are joining hands with ABB for a cause. The civil works will be carried out by the Ahmadiah Group, the local consortium partner for the project. The plant will pump about 1.5 million cubic meters of water a day from two desalination plants, more than doubling the country's fresh water supply.

ABB is responsible for the engineering, supply, installation, commissioning and testing of the electromechanical package for the new pumping plant, which is expected to be completed by 2013. Key products include the control and instrumentation system, motors, low- and medium-voltage switchgear, transformers, telecommunications and fiber optic equipment as well as the integration of 23 water facilities into a newly supplied national control center.

ABB solutions for the water sector include integrated and optimized ICE (instrumentation, control and electrical) systems, a range of power and automation products that improve the energy efficiency, productivity and reliability of water network, desalination and treatment plant assets.

Strengthening grid reliability in UAE

A new substation from ABB will serve the electricity needs of developments planned at Sudah port and the Al Hayl industrial areas of Fujairah, one of seven emirates that make up the United Arab Emirates. This includes the supply of gas-insulated switchgear, 500-megavolt ampere (MVA) power transformers, reactors, substation automation systems, as well as protection and telecommunication equipment.

The order comes from the Abu Dhabi Transmission & Despatch Company (TRANSCO), a subsidiary of the Abu Dhabi Water and Electricity Authority (ADWEA). ABB will design, supply, install and commission the substation.

ABB switchgear technology has achieved the highest ratings for reliable and safe operation.

The project is expected to be completed by 2012. In addition to increasing power capacity in Fujairah, it will strengthen the reliability of the UAE's power transmission network by feeding electricity to other emirates.

Enhancing power distribution in Pakistan

ABB power equipments help Engro Energy Limited and the National Transmission and Dispatch Company (NTDC) to distribute reliable power from one of Engro's power plants to millions of residents across Pakistan. Engro Energy Limited is an Independent Power Producer (IPP) in Pakistan, and NTDC is Pakistan's largest utility company.

In this power project, Engro wanted to connect its 225MW combined cycle power plant with NTDC's 220kV national network. Engro selected ABB to supply a state-of-the-art 220kV gas insulated switchgear (GIS) solution to make the connection possible. This installation includes nine GIS bays, along with local control cabinets, protection relays, power and distribution transformers, medium and low-voltage power products and control cables, as well as integration the entire control of the GIS with the established distributed control systems.

Our solution is specifically designed for future upgrading as both main circuits and control/protection are totally modular. This means the customer can expand and adapt the system based on future power demand.

220 kV gas insulated substation

"We were looking for a compact, future-proof and high-performance GIS that would transport electrical energy with low losses, strong reliability, easy maintenance, high degrees of safety year-round and competent support in Pakistan; ABB was able to deliver all fronts," says Sohail Ahmed, electrical manager for Engro Energy Limited. The ABB team successfully installed the 220kV gas insulated switchgear system in just 35 days instead of the initially scheduled project duration of five months. The substation was successfully energized earlier this year and has been running smoothly ever since.

ABB Full Service®

Implementing ABB Full Service® concept will help factory facilities to lower maintenance costs and secure the reliability and stability of equipment in daily operations and thereby improving efficiency and productivity

ABB Full Service® is a globally supported long-term, performance-based agreement in which ABB commits to maintain and improve the production equipment performance and reliability for an entire facility. ABB has globally developed and delivered maintenance excellence to convert maintenance cost centers to profit contributors.

"Our customers have understood that we can help them" says Jari Kaija, who leads the Full Service® business in ABB. "Outsourcing the maintenance is a strategic decision where the trustworthiness and capability to consistently deliver value to the client must be evaluated. Instead of aiming to increase the maintenance revenue from the site, we commit to a long-term partnership to reduce costs and improve the plan profitability at the same time. It's not an easy task, but we know how to do it".

During the past 20 years over 300 of ABB's client base have signed agreements to implement ABB Full Service®. This experience has contributed to solving productivity challenges for customers from various industries. Clients have access to technology, knowledge and resources of ABB's global network of engineers.

The journey begins by identifying customer's actual needs and implementing the right actions to improve their business according to a proven ABB Full Service® process. The areas for development are identified and areas for maintaining a leading position are charted. After joint commitment to ABB's value proposition, mutual goals and rewards for results will be agreed.

The ABB Full Service® concept does not generate any additional costs for the customer. Rather, it's a strategic shift to combine existing best practices with ABB's global know-how, where ABB takes responsibility for managing change as well as the implementation and success of your maintenance strategy.

When the ABB Full Service® agreement was signed with Sappi Paper in South Africa at the spring of 2009, Jonathan Hermanus, General Manager Sappi Cape Kraft Mill, South Africa stated that, "the Full Service agreement allows proven ABB methodologies to be implemented at our site while also

ABB Full Service® guarantees integrated solutions

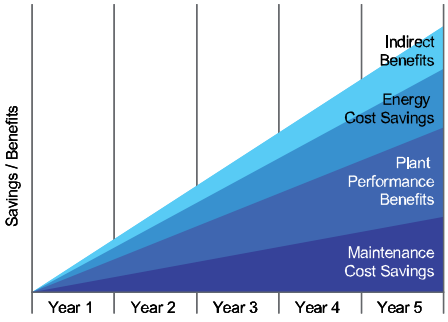


ABB Full Service® globally covers maintenance-intensive industries such as metals, minerals and mining, pulp & paper, oil & gas and petrochemicals.

enabling our staff to improve their personal competencies through a leading technology company."

Five new ABB Full Service® contracts are now signed in the India, Middle East and Africa region.

Over the past few months, the team has secured contracts, covering the entire maintenance of production equipment for Vale Oman's Iron Pelletizing plant and four ABB manufacturing facilities in South Africa, Egypt, Saudi Arabia and India.

The benefits we offer to our customers include:

- Increased work safety of the maintenance team
- Visible change in expertise and motivation of the work force
- Increased utilization and extended lifespan of equipment
- Improved energy efficiency
- Improved production effectiveness
- Reduced maintenance costs

"ABB Full Service® agreements have helped turn maintenance departments into profit centers for many years and we're proud to bring these productivity and cost-saving benefits to our own factories in the region," says Frank Duggan, region manager for the India, Middle East and Africa region. "These agreements will help the local ABB organizations obtain the best service and maintenance solutions for their operations, while they focus on improving the competitiveness of their core business."

Life-cycle service solutions

Services
- Reliable and efficient repairs
- Timely repairs and advanced logistics
- Country wide service network

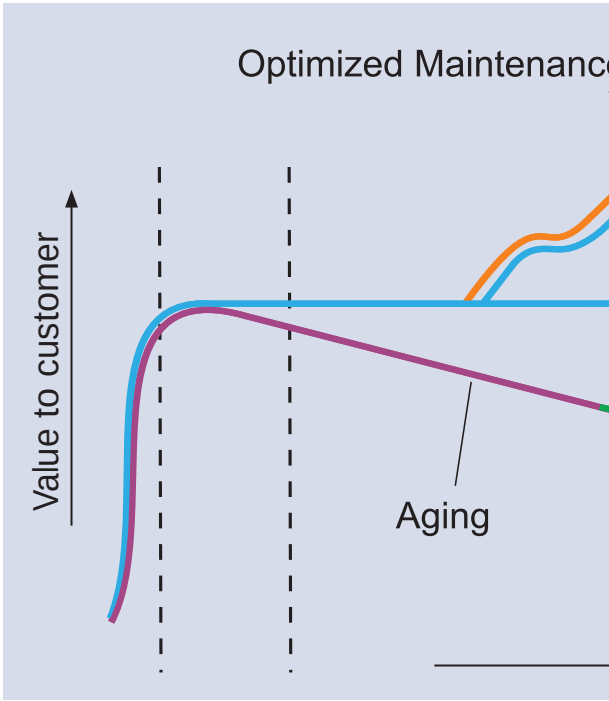
Benefits
- Reduced costs
- Minimum downtime
- Better reach and service support

In-house repair → Spare parts

Services
- Installation and commissioning
- Troubleshooting
- Overhauling
- Predictive, preventive and corrective maintenance

Benefits
- Faster start-up at lower cost
- Root cause analysis to bring plant into normal condition quickly
- Equipment life enhancement
- Increased plant performance

Field service and maintenance



Asset management

Asset management

Consulting

Services
- Plant performance benchmarking
- Sustainable maintenance
- Safety, health and environment
- Equipment performance management

Benefits
- Qualified analysis of asset
- performance and effectiveness
- Increased plant productivity
- Reduced operating costs
- Increased asset effectiveness

Services
- Overall equipment effectiveness (OEE)
- System studies
- System planning
- Detailed project study report for distribution improvement projects

Benefits
- Productivity improvements
- Cost savings
- Expansion planning

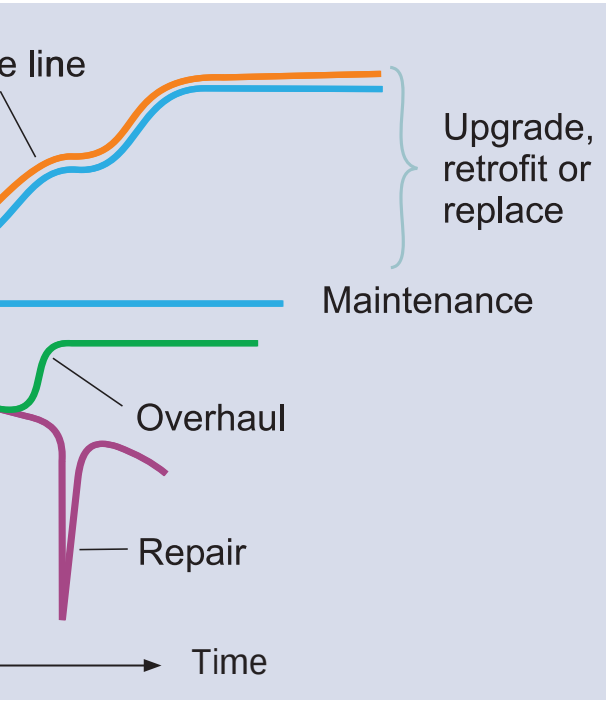
Services
- Replacement
- Refurbishment
- Channel partner access
- Legacy support

Benefits
- Better access to parts
- Minimum downtime
- Maximum return on parts investment
- Extended system lifecycle

Services
- Telephone support
- Web support (solution bank)
- Remote condition monitoring

Benefits
- Emergency call support (24/7)
- Faster access to support resources
- Remote access to expert analysis

Support & remote services



Migration & retrofit

Services
- Migration planning
- Migration implementation
- Retrofit solution

Benefits
- Return-on-Investment based upgrades
- Access to latest technology
- Simplified expansion and replacement

across the life-cycle

Service contracts

Training

Services
- Product programmes
- Process programmes
- Customer programmes

Benefits
- Higher asset utilization
- Increased employee productivity
- Increased uptime

Services
- AMC - Annual maintenance contract
- Comprehensive AMC

Benefits
- Improved equipment utilization
- Effective maintenance planning
- With minimised downtime

Control system upgrade for Tata Power

A power generation plant

On-line monitoring for functional logics was implemented for the first time in India which has led to a substantial enhancement on the diagnostic features of the P13 system.

ABB has upgraded the control system of Unit2 and 3 of the 4x120MW Thermal Power Plant of Tata Power at Jojobera in Jharkhand, India. The power plant feeds TATA Steel and is very critical to its operations.

After conducting a detailed survey ABB proposed that improvement in reliability and availability of the control system could be achieved by upgrades using ABB components and solutions which could do away with the total replacement that the customer was contemplating.

ABB's scope included upgrade of existing human machine interface (HMI) system, developing fresh graphics for the entire plant, supply of new engineering and diagnostic tool - Progress3 for the Procontrol P13 System, extension of P13/42 Intra Plant Bus to the TMR Turbine Protection and EHTC Panels and carrying out modifications in the PR05 Processor logics etc. In-house engineering, hardware and software factory acceptance test (FAT) with customer, installation of the upgraded system also were part of the ABB scope.

On-line monitoring for functional logics was implemented for the first time in India which has led to a substantial enhancement on the diagnostic features of the P13 system. This implementation opens up new possibilities since there are numerous Procontrol P13 Installations in India.

Major benefits were increased reliability for turbine and boiler protection system, added plant availability and generation, enhanced diagnostics and fault finding features. The Function Chart Builder facility of the Progress3 implemented for the first time in India on-line functional logic monitoring and simulation features.

Optimizing grid reliability across four countries

Round the clock maintenance support

ABB to provide maintenance for equipment and systems at the Gulf Interconnection Grid's newly constructed substations for Gulf Cooperation Council Interconnection Authority (GCCIA) across four countries.

Substations covered under the agreement include Al Fadhili, Ghunan, Salwa and Ras Al Qurayha in Saudi Arabia, Al Jasra in Bahrain, Al Zour in Kuwait and Doha South in Qatar.

The two-year contract between ABB and the GCCIA will aim to optimize the grid's reliability through regular maintenance and provide technical and emergency assistance when required.

ABB will provide round-the-clock support to the Interconnection Grid, including frequent substation visits for preventive maintenance and inspection as well as coordination with all suppliers for substation equipment.

LEAP in time cuts CESC losses

Life Expectancy Analysis Program (LEAP) – Premium, was conducted on 70 MW unit in CESC Ltd, the fully integrated power utility catering to 2.3 million customers in Kolkata and Howrah - located in the eastern Indian state of West Bengal. This analysis program indicated looseness of coils and complete erosion of the corona protection shield for first few coils from phase lead end for all phases. The life expectancy was just 20,000 operations. The customer was alerted without delay and got the rewinding done in 10,000 hours as recommended. This averted a potential catastrophic failure of coil that could have damaged the core. Due to planning for spare coils and wedges, the customer could save $2.5 million per month due to reduced downtime for rewinding.

LEAP now has global recognition and various hubs have been setup to be close to customers and enable quick action. The hubs are established in USA, Chile, Peru, Brazil, Sweden, Switzerland, South Africa, Qatar, Saudi Arabia, India, Singapore, China and Australia. The LEAP hub in India is also the Center of Excellence where the analysis work is conducted and database is maintained.

Ensuring optimum productivity for DUBAL

The modules allow extensive flexibility in maintenance and thereby reduce process downtime

Dubai Aluminium Company Ltd (DUBAL) steam turbine, ST2, was upgraded with ABB's decentralized control system PROCONTROL P. This control system uses dedicated intelligent modules each equipped with its own processor with self-diagnostic features for fast enhanced steam turbine control, critical control and fast scanning.

The modules allow extensive flexibility in maintenance and thereby reduce process downtime. The upgrade to the latest control philosophy has resulted in smoother operation of the main steam control valve with additional droop functionality required on a fluctuating and demanding grid.

The speed chain from probes, turbine speed control and electrical over speed protection system was upgraded to ABB's digital system. The probes interface directly with PROCONTOL P system without external interface modules.

The synchronizing equipment was upgraded to a manual and automatic synchronizing system, SYNCHROTACT 5; and existing excitation system was upgraded to UNITROL6000. The existing generator protection and switchgears were interfaced with the new system.

The new systems are linked to the PROCONTROL process operator station "POS30" for plant operations, which has long-term data storage and alarm management functions. Higher overall plant availability is achieved through a user-friendly process that mimics turbine operation through graphical displays. Turbine operation can be managed locally and from the central control room.

Service agreement helps Vale scale efficiency at Oman plant

Vale's iron ore and pellet plant and distribution centre in Oman

Vale is investing $1.3 billion dollars in the new direct reduction iron ore pelletizing plant and distribution center, located in Sohar Industrial Port in Oman. For Vale, it will be the first pelletizing operation outside of Brazil. The initial annual production capacity of the plant will be 9 million tons and once completed the site's distribution center will have a capacity of handling 40 million tons.

The facility will cater to the Middle East steel industry's growing demand for iron ore and pellets. The ABB agreement will cover the development and execution of all maintenance activities at the plant. ABB will manage the entire maintenance crew to ensure that mechanical and electrical maintenance regimes, shutdown management, planning and scheduling, as well as reliability maintenance are completed according to the ABB's maintenance outsourcing concept.

Over the years, ABB has delivered numerous automation solutions, services and related support to Vale's mining operations all over the world. Vale is a global diversified mining company present in more than thirty countries on five continents, and is the world's largest producer of iron ore and pellets.

Vale OIC site commissioning

The Vale OIC site in Sohar, Oman is a Greenfield site with a significant ABB presence including a turnkey package for products and systems, installation contract, a Full Service agreement for the Management and Planning of Commissioning and a Full Service Maintenance Agreement

The Full Service Management and Planning of Commissioning agreement is a relatively new offering to our Greenfield Full Service customers. The agreement for Vale is an eighteen month agreement which commenced in January 2010 and the scope of services within the agreement includes managing and planning all commissioning, developing and managing all commissioning schedules, managing all commissioning, monitoring and administering deficiency punch lists, coordinating and managing Contractor and Supplier interfaces etc.

The dedicated ABB commissioning team has achieved significant success in both the development and implementation of our offering in undertaking all planning and management activities of the commissioning phase at the Vale, Sohar site.

Committed life cycle services for marine customers

ABB Marine Life Cycle Services stands for continuous customer commitment, to keep the ABB products and system performing smoothly, with maximum security and availability. To support local customers and vessels operating in the region and securing the service deliveries, ABB has recently established a Marine Services Center (MSC) in Abu Dhabi, UAE, our 22nd dedicated marine service center globally.

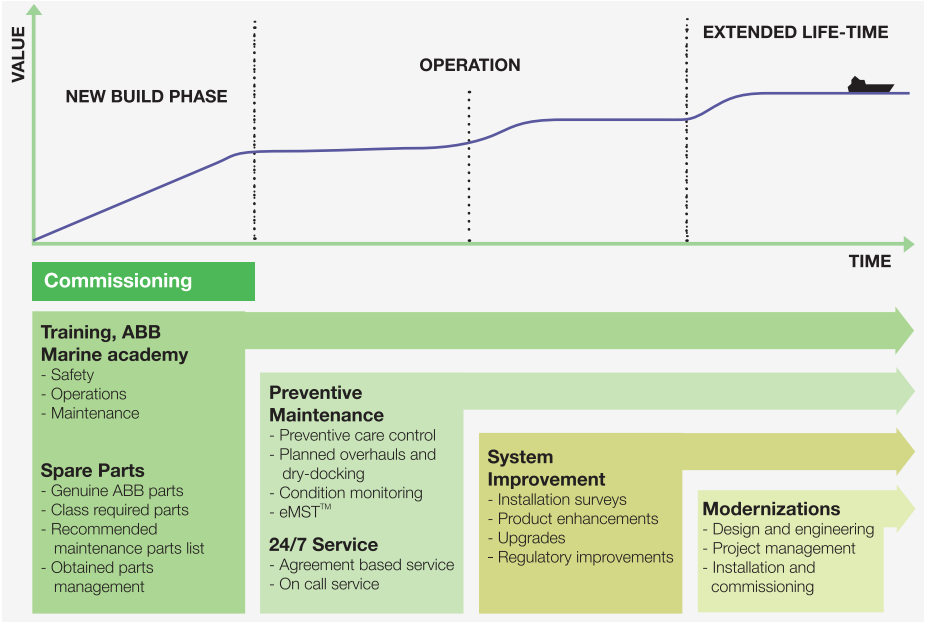
The process starts at the shipyard where the ABB Diesel Electric system is installed and commissioned. To guide the customers the ABB Marine Academy has been established. These learning environments are furnished with authentic vessel equipment, such as a full range of ABB drives, Azipod® steering units and main switchboard cubicles, for in-depth, hands-on training.

Once the vessels are taken into operation, life cycle service concept developed optimized offerings to secure the safe operation and availability of the system as life cycle service concept. Grouped under preventive maintenance, the offerings contains elements like 24/7 service for spares or technical support, Remote Diagnostic Services (RDS) and eMST®, the Electronic Maintenance Support Tool. The aim is to establish, together with the customers, the optimum preventive maintenance plan that meets the operational variables such as budget, vessel availability, crew competence level and environment.

Marine propulsion system

Annually, ABB invests more than a billion dollars in research and development and more than half of our efforts are aimed at improving energy efficiency. The goal of ABB Marine Services is to provide system improvements based on the latest technical development to our customers by launching product enhancement and upgrade packages to meet the changes in the regulatory requirement.

Vessels built over a decade ago often employ diverse technical systems delivered by both ABB and other manufacturers. These systems are subject to aging and wear and in some cases no longer meet the regulatory requirements. Also, for some of these systems and products, production has been discontinued, making maintenance, technical support and spare parts supply difficult. ABB Marine Services provides complete modernization projects, including performance optimization, design, engineering and commissioning, product and system recertification and updated documentation, to replace complete or part of the existing system.



Wide range of service solutions - covering the full life cycle

World's highest substation powers the tallest building

An aerial view of the Burj Khalifa building

The tower will have peak demand of an estimated 36 megavolt ampere (MVA), which is roughly the amount of electricity needed to power 4,000 households.

A host of ABB products and solutions are improving energy efficiency and offering electrical stability in the world-famous Burj Khalifa - an iconic building in the UAE that has the power needs of a small town.

At 828 meters height, the world's tallest building, Burj Khalifa also presented many electrical engineering challenges. Recognizing ABB's ability to meet these unique challenges, the developer, Emaar Properties, selected us to provide custom solutions for delivering energy efficiency and reliable and safe power to apartments and offices on all occupied floors.

ABB designers and engineers worked on a one-of-a-kind distribution substation solution that would be able to control and distribute power throughout the 5-million square-foot building.

The distribution substation and control equipment that ABB custom-engineered for the building are located on the 155th floor. The world's highest substation ensures reliable, safe power to everything from lighting and elevators to the ventilation, heating and air conditioning system.

Burj Dubai's power needs will be equivalent to those of a small town and ABB's job is to ensure the reliable delivery of that electricity. The tower will have peak demand of an estimated 36 megavolt ampere (MVA), which is roughly the amount of electricity needed to power 4,000 households.

At peak cooling times, the Burj Dubai will need to draw enough power to match the cooling capacity of 10,000 tonnes of ice per day.

For that, the tower is equipped with its own substations, where the voltage of electricity from the utility is lowered to a level necessary for its safe delivery to consumers. Such systems rely on switchgear, which switches and interrupts devices that can turn current on and off so that electrical equipment can be isolated for maintenance, repair or to clear electrical faults.

As part of the project, ABB delivered 50 lightweight gas-insulated medium voltage switchgears, which offer a space-saving design that is easy to service. ABB has supplied 72 Resibloc® distribution transformers, equipment used to regulate the supply of small amounts of power directly to residences.

In addition, the tower uses ABB low-voltage switchgear to send power to all parts of the building, including 37 main distribution boards with electronic circuit monitors, 442 sub-main distribution boards and 1,319 final distribution boards.

Keeping cool

Reliable heating, ventilation and air conditioning (HVAC) is an essential function in a country where July humidity reaches 90 percent, the air temperature exceeds

ABB products and solutions at Burj Khalifa

49C, and weeks of blazing sun turn even the sea a soupy 38C.

Keeping life comfortable in the Burj Dubai tower are ABB's variable frequency drive panels, consisting of ABB variable-speed drives, designed to control air-handling units, exhaust fans, booster pumps, chilled-water pumps, supply and return air fans, smoke-gas fans and fresh-air fans.

The introduction of a dedicated ABB drive for heating, ventilation and air conditioning (HVAC) applications is a significant milestone in the development of alternating current (AC) drives.

Top monitoring and control system

Watching over the smooth operation of all the electrical equipment is another ABB contribution, a state-of-the-art power monitoring and control system known as MicroSCADA that integrates unit substations at various levels of the building.

ABB's MicroSCADA technology offers immediate access to real-time information as well as easy connectivity to other systems. MicroSCADA Pro based systems are designed for local and remote control applications in both electrical and non-electrical processes.

Emaar Properties needed a solution that was space-saving and compact with state-of the-art products and control, along with strong local service support - and that was exactly what ABB was able to deliver.

Burj Khalifa - Skyscraper unlimited

Burj Khalifa is the world's largest building. It's a stunning work of art and an engineering marvel par excellence. As far as symbolism goes, it stands as a testimony for cross-border international cooperation. ABB is proud to have contributed numerous products and solutions to this symbol of proud and resurgent Dubai.

A host of ABB products and solutions are improving energy efficiency and offering electrical stability in the world's tallest building Burj Khalifa in Dubai, UAE.

The building includes 911 luxury condominiums, seven restaurants, the world's first luxury Armani hotel, a health club, spa, tennis courts, the world's highest public observatory at 124th floor, six mechanical floors, three floors for communications equipment, 50 000 sq m of office space and much more.

The world's tallest building

- Peak demand of an estimated 36 megavolt ampere (MVA) enough to power 4,000 households.
- World's tallest building at 828 meters height
- World's highest substation located at 155th floor
- At peak cooling times, the Burj Dubai will draw enough power to match the cooling capacity of 10,000 tonnes of ice per day.
- The building includes 911 luxury condominiums, seven restaurants, the world's first luxury Armani hotel
- The world's highest public observatory is located on the 124th floor

Force behind the world's tallest fountain

The spectacular dancing fountain

Dubai Fountain, the world's largest dancing fountain presenting an aquatic foil to the world's tallest building. The record setting fountain uses 6,600 lights with 50 colored projectors and is able to shoot water into air at an impressive 150 meters. Behind the swirling blasts of water lie ABB air- and gas-insulated switchgears, dry-type Resibloc® transformers, power monitoring systems, 4200A LV MNS switchgear.

Dubai has made it a habit to break records. Another stellar sight is the Dubai Fountain, the world's largest dancing fountain presenting an aquatic foil to the world's tallest building. ABB switchgears and transformers are working together to ensure a steady flow of power to the Dubai Fountain. It serves as a tourist attraction to the new neighborhood of downtown Burj Khalifa. The record-setting fountain uses 6,600 lights with 50 colored projectors and is able to shoot water into air at an impressive 150 meters.

Reducing energy consumption

To ensure that the fountain receives reliable power, the builder, Emaar group selected ABB to supply a host of power equipment for the project. These included ABB air- and gas-insulated switchgears, dry-type Resibloc® transformers, power monitoring systems, 4200A low voltage MNS switchgear and more.

Resibloc® dry-type transformer

The customer wanted low-maintenance, environmentally-friendly transformers that can withstand extreme heat and are operationally reliable and ABB's dry-type transformers excelled in all these areas.

The contribution to the increased energy efficiency of the fountain, thanks to the capacitor banks and the harmonic filters. The capacitor banks improve the power factor, thereby decreasing the amount of reactive power consumed. Meanwhile, the harmonic filters improve the power quality by reducing the harmonics, which in turn help to stabilize the entire power network.

On time execution

ABB first began with the engineering activities in December 2008, followed by procurement, assembly, testing and commissioning at the site. The work was completed by end of March 2009 - in record time.

First comprehensive channel partnership in Nepal

Range of low voltage products from ABB

The scope of this non exclusive agreement gives ABB an opportunity to directly access the Nepalese market - including the industrial and commercial sectors which have been displaying rapid growth. This will also ensure quick availability of ABB's products in the local market and in local currency apart from local after sales and warranty services

ABB in India signed its first comprehensive Channel Partner agreement with M/s Cosmic Electrical Engineering Associates (Pvt.) Ltd. for the distribution of the standard product portfolio covering low voltage products, medium voltage products and discrete automation products and systems in Nepal. The agreement was signed between Mahesh Mahato, Managing Director of Cosmic Electrical Engineering Associates (Pvt.) Ltd., Nepal and Vinod Raina, Head of Channel Business Organization, ABB Limited, India.

The scope of this non exclusive agreement gives ABB an opportunity to directly access the Nepalese market - including the industrial and commercial sectors which have been displaying rapid growth. This will also ensure quick availability of ABB's products in the local market and in local currency apart from local after sales and warranty services. The agreement is in continuation with the sales promotion activities jointly conducted by Cosmic and ABB in December 2009 and is another evidence of the strong commitment of the group towards the small emerging countries.

Cosmic Engineering Associates is a local company involved in wholesale distribution and retail sale of industrial electrical products in Nepal. Cosmic has been associated with ABB since 2008 and has shown systematic growth in business over the last two years. They are also planning initiate an exclusive showroom in the down town business district of Nepal to showcase ABB products to showcase the look and feel of the products to the customers.

Inking channel partner agreement in Nepal

ABB gets closer to GCB users in India

With an installed base of more than 5,000 units worldwide, ABB's high current systems business is the global leader for generator circuit breaker systems.

Generator circuit breaker

ABB's high current systems (HCS) recently conducted a training program for generator circuit breaker (GCB) users in India.

To facilitate the training in India a single phase generator circuit breaker module was shipped from the factory in Zurich and installed in the power technologies training centre in Vadodara, and the first GCB user training programme was held with 43 user customers and six service engineers and sales personnel from India. The training was conducted by experts from the sales, training and services functions of the business based in Zurich.

The objective of the program was to ensure safe, cost-efficient and risk-free operation of the GCB at customer sites. The training enables the participants to enhance their operation and maintenance skills, enabling the organization to indirectly optimize the total life-cycle cost of their installations. Currently approximately 35 percent of power plants in India are equipped with GCBs. The training was attended by users from the operation and maintenance, engineering and technical departments. There were lively and interactive sessions and the program closed with a test and distribution of certificates to the participants.

With an installed base of more than 5,000 units worldwide, ABB's HCS business is the global leader for generator circuit-breaker systems.

ABB offers GCB solutions for new power plants as well as retrofits in existing power plants. The key benefits of installing a GCB in a power plant are – simplified operation procedures, improved protection of generators and transformers, high power plant availability as well as economic benefits as per local conditions.

Industrial robot range expanded with three new models

The new IRB 2600 family of medium capacity multipurpose robots featuring an optimized, compact design that offers high payload capacity of up to 20kg and an ultra-wide working range have been launched recently.

The IRB 2600 family contains three models: two short arm variants (1.65m) for 12 or 20 kg payloads and a long arm variant (1.85m) with a 12 kg payload.

The IRB 2600 also offers the best accuracy and speed in its class, helping to increase output and introduce faster cycle times and lower scrap rates for improved productivity. These robots are particularly suitable for machine tending, material handling, arc welding and other process applications.

IRB 2600 robot

The IRB 2600 is extremely fast and can improve production cycle times by up to 25 percent. The high speeds and very fast acceleration are achieved by a combination of the new lightweight design combined with ABB's patented QuickMove motion control software.

Ventyx: an ABB company

Managing the grid

Ventyx, an ABB company, is a leading business solutions provider offering software, data and advisory services. Ventyx offerings comprise a broad range of solutions to address the most critical needs of utility, power and communications companies, including asset management, customer care, energy analytics, energy operations, energy trading and risk management, mobile workforce management and network management.

Acquired by ABB in June 2010 and merged with the network management business unit, Ventyx delivers solutions for the control and management of the total utility value chain from a single trusted supplier. Ventyx provides network management software offerings, which include SCADA, generation management, transmission and distribution management, outage management, market management systems and services, to provide operational management, control and enterprise IT solutions from one provider.

As a result of this unparalleled breadth of solutions, Ventyx can be found across the globe improving our customers' operational and financial performance with innovative applications of technology and expertise. Ranging from nuclear plants to call centres, Ventyx people and technologies are proven.

New transformer line in Egypt

A new production line for dry-type transformers has been commissioned in Egypt to cater to the growing number of power and industrial projects. The facility will produce dry-type transformers upto 2000 kVA.

The transformers manufactured at the factory will use vacuum cast coil, which is designed for the most demanding environmental conditions, which is a key requirement for our customers.

Dry transformers are a good solution for urban substations; they are safe for people and property and environmentally-friendly. They enable customers to place these units inside their buildings close to their loads, reducing losses and operation costs with easy installation and also easy maintenance. In general there are additional savings for the client included in civil works, the fire protection system, commissioning, and the yearly maintenance provision.

1600 kVA OLTC Vacuum cast coil transformer

New Wind power generator factory

Wind power generator factory at Vadodara

The fourth global wind power generator factory was inaugurated in Vadodara, India. The factory will supply wind power generators, a crucial component in wind turbines, for the growing Indian and global markets.

The new factory will produce up to 100 units per month with a rating of up to 2.5 megawatts. Ulrich Spiesshofer, head of ABB's Discrete Automation and Motion business, inaugurated the factory in front of 150 customers and channel partners together with the local team.

Spiesshofer emphasized on the growing demand of energy efficient solutions and the contribution of wind energy in meeting this requirement. Expressing his views on wind power he mentioned that among all forms of renewable energy, wind energy is more reliable, efficient and clean and India has huge potential for generating wind power. Currently India is the 5th largest producer of wind power in the world, and the government has ambitious plans to increase renewable generating capacity in the country. ABB is well positioned with a complete portfolio offering to support customers in this industry.

Wind power generator

ABB supplies a variety of components and solutions for wind turbine manufacturers and operators: from the robots that paint the blades to motors, drives, transformers and low and medium voltage equipment located in the nacelle and the products and systems that connect the power to the grid.

New robot control software

The latest version of its robot controller software, RobotWare 5.13, provides manufacturers with improved programming and control of robotic equipment, as well as enhancing functionality, safety and motion control. For manufacturers this facilitates smarter, leaner robot cell concepts and the enhanced control of production lines.

New features to SafeMove, ABB's robot safety system achieves precise control of robot motion allowing optimization of cell design and production flow.

The 'indexing conveyor' function, coupled with ABB's FlexPicker IRB360 increases picking and packing cycles to 450 products per minute and eliminates the need for expensive racetrack installations and helps to significantly reduce the overall cost of a packing installation.

RobotWare 5.13

The Torque Slave software has been devised which enables multiple motors to be driven as a single logical axis. Using this function, the robot is able to control heavy-duty equipment, such as large workpiece positioners.

The Lean version of the DeviceNet communications protocol also offers new auto configuration and bus scan tools for seamless communications with all connected devices.

RobotWare 5.13 software is also 100 percent compatible with ABB's new IRC5 Compact controller which combines the powerful performance of the standard IRC5 controller, including superior motion control and flexible RAPID language, with a significantly reduced footprint.

Reducing water leakage in Riyadh by 40 percent

Range of flowmeters

Customers of ABB flowmeters in Riyadh required a compact, exceptionally robust and maintenance-free solution that would measure pressure as well as flow, and transmit the data via GSM to the customer's central control room.

ABB's range of FlowMaster flowmeters has been selected on three separate occasions as part of a large scale project to modernize the gigantic water distribution network of Riyadh. About 60 percent of Riyadh's water supply was lost through leakage in the 10,000 kilometers of pipes that transport water to the city's 4.5 million population.

The government owned National Water Company is using 900 ABB AquaMaster and WaterMaster flowmeters, which measure the flow and pressure of water in the network's primary pipeline, to achieve its target of reducing the volume of water lost due to leakage to a more sustainable 20 percent.

The customers of ABB flowmeters in Riyadh required a compact, exceptionally robust and maintenance-free solution that would measure pressure as well as flow, and transmit the data via GSM to the customer's central control room. For locations where there is no connection to the power network, it is battery-powered to avoid the high maintenance requirements.

AquaMaster and WaterMaster have features such as unparalleled accuracy, ease of use and advanced data communications (GSM). AquaMaster is powered by the AC network, the latter by a single ultra long-life battery. They can be buried directly in the ground or submersed in water without any protective chambers and the strong, durable design ensures a long maintenance-free operating life.

Measurement accuracy of these flowmeters enables the customer to know exactly how much water is flowing through the main pipeline and to detect leaks as and when they happen. ABB's FlowMaster electromagnetic meters are widely used for flow measurement in industrial processes, water and wastewater management, as well as food and life science industries.

Largest grid-connected solar power plant in Nordic countries

The largest grid-connected solar power plant in the Nordic countries, built on the roof of an ABB factory, has been powered up recently. The 181 kilowatt (kW) solar power system is on the rooftop of ABB's low voltage AC drives factory at Pitäjänmäki, in Helsinki, Finland. The electricity it generates is to be used for charging the batteries of the factory's fork lift trucks, and for cutting energy consumption peaks at the factory.

The solar power plant is the first in Finland to use ABB's recently introduced string inverters together with a central inverter. The ABB solar inverters are used for converting direct current, generated by solar panels, into high-quality alternating current that can be fed into the power network.

The use of several smaller inverters helps overcome the non-uniform shading across the solar array. As such, ABB string inverters, rated from 4 to 8 kW, and one 120 kW ABB central inverter are used in the 1,200 square meter solar module area. All the inverters are connected to the building automation system and can be monitored remotely.

Panels at a solar power plant in Spain

The 181 kW solar power plant is expected to generate about 160,000 kWh per year and will benefit from the region's long summer days. The electricity generated is equivalent to the annual energy consumption of about 30 residential homes and is fed directly to the grid within the factory for powering the battery chargers of the forklift trucks. The project, which costs approximately 500,000 euros, is partly funded by Finland's Ministry of Employment and the Economy from its renewable energy system investment fund.

Supporting Western Australia's largest wind farm

ABB has been awarded a contract to supply power technology for the Collgar Wind Farm project in Western Australia (WA). ABB will provide world's slimmest 33 kilovolt (kV) medium voltage switchgear for this $750 million renewable energy project.

The project is the largest single stage wind farm development currently under construction in the southern hemisphere and will displace more than one million tons of greenhouse gas emissions annually, equivalent to taking more than 250,000 cars off the road. With 111 wind turbines the wind farm will generate approximately 792,000 megawatt hours of renewable electricity per year, enough to power more than 125,000 homes yearly.

ABB will supply over 200 custom-built Safewind medium voltage switchgear units to be installed inside the wind turbine towers. The units will isolate and switch the 33 kV reticulation power generated by the turbine. All the live parts and switching components are protected in a stainless steel tank to ensure the highest level of reliability and safety. This also offers a long and trouble-free service life in the harsh and inaccessible environments of wind farms.

On shore wind farm

Safewind, ABB's latest product innovation for wind farms, is only 420mm wide and small enough to fit through the narrow doorway of the turbine tower. This means it can be installed, even after the tower has been raised, offering operators flexibility and a more economical option over the expected lifetime of the towers.

The wind farm is on 13,000 hectares of land and is a venture being undertaken by UBS International Infrastructure Fund and Retail Employees Superannuation Trust in Western Australia.

ABB is one of the world's largest independent suppliers of internal electrical components, controls and grid connections for wind power projects.

Revolutionizing railways in India

Delhi Metro train

ABB is the world's leading supplier of automation and power products for railway infrastructure and rolling stock projects.

Indian Railways (IR) is one of the world's largest railways systems operating 47,000 coaches and electric multiple units (a train with multiple passenger carriages) and 8,400 locomotives transporting 19 million passengers and 2.5 million tons of freight every day on 64,000 kilometers of tracks.

Electric trains account for more than 65 percent of freight traffic and 50 percent of passenger traffic in India. IR is in the process of electrification of 1,500 km of existing rail tracks which will enable the company to operate heavier freight trains and faster passenger services, and in particular more electric multiple units, which improve acceleration and braking capability.

As the world's leading supplier of automation and power products for rail applications – both for rolling stock and fixed installations that power the railway lines – ABB provides railways in India with many products and customized solutions to increase the efficiency and availability of trains and electric lines.

The offerings range from traction transformers, converters, motors and many other components for the trains, to the construction and installation of complete power supply system and control systems for rail networks, as well as turbochargers for the diesel locomotives. In addition ABB is supplying independent rail operators with a broad spectrum of solutions for India's rail-based metro systems in Delhi, Mumbai and Bangalore.

For vehicle propulsion and onboard auxiliary power supply, IR has selected ABB's BORDLINE converters. For IR locomotives, BORDLINE propulsion converters mean greater efficiency and reliability, and lower power losses. For onboard auxiliary systems, IR is replacing low-efficiency rotary converters with ultra-efficient BORDLINE auxiliary converters.

ABB products for IR

To ensure a reliable supply of quality power to lines and trains, IR uses innovative ABB rail products such as STATCOM, a dynamic reactive power compensation solution that improves the power factor and voltage profile by reducing power losses and harmonic distortion. FSKII is an outdoor circuit breaker with radically fewer moving parts that is designed to be virtually maintenance free. It protects traction substations and switching posts from overvoltage.

Every year IR rolls out some 300 diesel locomotives, and ABB turbochargers have been boosting their performance since 1975. ABB's new range of high-efficiency turbochargers reduces fuel consumption by an impressive 5 percent. ABB is also involved in IR's emissions reduction program and performs the operator's turbocharger overhauls.

Although Delhi and Kolkata are the only cities in India to have operating metro systems, new metro projects are currently under construction in Bangalore, Mumbai, Chennai and Hyderabad. ABB is involved in several of these projects, in particular with Delhi Metro Rail Corporation (DMRC), the first independent metro operator in the country.

ABB's involvement in the Delhi mass transit system is truly comprehensive, ranging from traction transformers and motors for the trains to substations, overhead electrification, supervisory control and data acquisition (SCADA) control system for the entire network, and building and asset management solutions.

Executive editor: Karen Wilds
Editor-in-chief: Uday Mohanty
Editorial board: Alex Malouf, Andrea Lampugnani, Anshuman N, Chesney Bradshaw, Deepak Sood, Graham Craven, Juliane Lenzner, Midhun Murali, Mohan N, Neil Quadros, Sohair Hosny, Syam Mohan, Tuija Elomaa-Maenpaa
Design and layout: Ashish Shukul, Mark Sarmiento, Michael Wachter

Contact is published in English for circulation among ABB customers and stakeholders with an interest in ABB offerings, products and technologies.
Partial reprints or reproductions are permitted subject to full acknowledgement. Complete reprints require the publisher's written consent.
Publisher and copyright ©2011
ABB Asea Brown Boveri Ltd.

Disclaimer
The information contained herein reflects the views of the authors and is for informational purposes only. Readers should not act upon the information contained herein without seeking professional advice. We make publications available with the understanding that the authors are not rendering technical or other professional advice or opinions on specific facts or matters and assume no liability whatsoever in connection with their use.
The companies of the ABB Group do not make any warranty or guarantee, or promise, expressed or implied, concerning the content or accuracy of the views expressed herein.

Preview 2|11

Efficient and sustainable transportation solutions

Whenever separate elements are joined together, the whole is often much more than the sum of its parts. This thought will be reflected in different ways in the next issue of Contact.

Transportation is about connecting people and places. It broadens horizons and makes trade possible. Connection can also be about collaboration. ABB serves systems suppliers in the railway industry with its broad product portfolio. Learn more about ABB's contribution to railways and transportation in the pages of the next issue of Contact.

Connect renewable power to the grid?

Electricity generated by water, sun and wind is most abundant in remote areas like mountains, deserts or far out at sea. ABB's leading power and automation technologies help renewable power reach about 70 million people by integrating it into electrical grids, sometimes over vast distances. Our effort to harness renewable energy is making power networks smarter, and helping to protect the environment and fight climate change. **www.abb.com/betterworld**

Naturally.

Power and productivity
for a better world™

ABB