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Dear Reader,

Change is something we all have to live with. The world doesn’t stand still, not even for a moment. This applies as much to industries as it does to economies and markets. They – and we - are all in constant flux.

In this issue of In Control, my colleague Markus Bruegmann, head of global sales and marketing for ABB’s power generation business, identifies the investment and market trends that are driving (and changing) our industry on a global and regional basis. Having sketched the main trends he then explains how ABB can help customers (contractors and end users) ride these trends and meet changing market requirements successfully.

One of the trends that Markus highlights is the need in emerging markets for distributed power generation and microgrids. Due to rapid economic growth and growing demand for electric power there is an increasing need for standardized, scalable and cost-competitive distributed power generation systems in many parts of the world. Distributed power generation systems solve many requirements. They provide electric power in areas where there is no electricity, they can use different types of fuel, and are suitable for different types of application. Contractors require standardized, modular solutions that are fast to install and quick to start production. These are criteria that ABB meets with a complete offering of standardized, modular solutions that cover the entire power and automation scope of supply – for the power block, distributed control or SCADA system, and substations.

Thanks to two ABB technologies, contractors and end users can now benefit even more from their microgrids and distributed power generation systems. Our Microgrid Plus System is a unique technology with a proven track record that allows conventional fuel-based generators to integrate with renewables in the same microgrid. It enables the microgrid to operate with maximum use of renewable power (so-called high penetration), switch seamlessly between the two power sources, and maintain grid stability. We look more closely at microgrids and our solutions on pages 6-11.

A second ABB technology that is making a huge difference in distributed power generation is our plant optimization software. On page 13 you can read how an ABB solution has enabled a young German company, Next Kraftwerke, create one of the largest virtual power plants for renewable energy in Germany. Thanks to this cloud-based solution, Next Kraftwerke can pool the production of more than 1,000 small- and medium-sized renewable energy plants into a virtual power plant that has the scale and flexibility to participate in the country’s lucrative ancillary services market.

Finally, I would like to thank Mr. Liao Xiong, instrumentation and control director at one of China Resources Power Holdings (CR Power) newest plants in China, for sharing his experiences of ABB and Symphony Plus with our readers. His plant is the first in China to use our new Symphony Plus HPC800 controllers, which are designed specifically for large and complex power and water installations. ABB plant automation systems are installed in 18 of CR Power’s fleet of plants in China, controlling around 10,000 MW of the company’s generation capacity. It is a relationship of which we at ABB are truly proud.

With kind regards,

Massimo Danieli
Head of ABB Power Generation
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Taking the market’s pulse
Current trends in power generation and water

Interview with Markus Bruegmann, head of global sales and marketing for ABB’s power generation business.

The international power generation and water industries are going through a period of sustained change. What are the main investment trends?

In answering a question on global investment trends we should always remind ourselves that the world economy is not a single entity. It is highly interconnected and globalized, but growth rates differ widely between regions and countries. For instance, this year Asia will again lead the way with a growth rate of 5.7 percent in gross domestic product (GDP). Not far behind is fast-developing and natural resource-rich Africa on 5.2 percent. Eastern Europe and Latin America will have a healthy GDP growth rate of around 3 percent. North America is pulling itself out of the economic crisis, but Europe and Japan are still struggling. All of this impacts the investment market in power generation and water applications. In Asia and Africa investments are strong, whereas at the other end of the scale in Europe, there is little investment to speak of.

How will these GDP growth rates translate into global market trends within the next few years?

According to the International Energy Agency (IEA), there will be a net increase of 1,335 GW of new power generation capacity worldwide by 2020. Half of this new generating capacity will be in Asia. Gas will be the single largest energy type for this new capacity, accounting for about 25 percent of the increase. Coal will continue to be the main fuel type for generating power, but solar photovoltaic and wind will significantly increase their share of the global market.

Investment in water and wastewater treatment is forecast to grow by around 40 percent a year over the next few years. Water scarcity, population increases, urbanization and economic growth are all driving the need for safe and secure access to potable water and better sanitation. Water companies are under pressure to become more efficient and cost effective. There is a growing need to provide water for, and manage the wastewater from, industries like oil and gas and mining and minerals, especially in emerging markets. These are all increasing the demand for water by huge levels year on year.

What are the regional trends in power and water applications?

In Asia, including China and India, investment in new conventional coal- and gas-fired power plants will predominate, with solar photovoltaic and wind power also increasing significantly. We are seeing the same trend in Africa, but with two important differences: a greater reliance on hydropower and a growing demand for fuel-efficient microgrid applications in areas without access to electricity and in energy-hungry industries like mining. In the Middle East investment in large gas and combined cycle power plants will continue. And in Europe and North America the emphasis will remain on renewables, with little investment in conventional power generation. In water, the overall driver will be the need for a safe and secure supply of clean water and reliable wastewater treatment for cities and industries.

How can ABB help customers meet these trends?

Well, to begin with we are a global market and technology leader in the technologies that power and automate power generation and water treatment applications. We’ve been in the power generation industry since its inception more than 125 years ago and in the water business for more than half a century.
Second, our Symphony® Plus total plant automation platform is designed specifically to meet the needs of the power generation and water industries in all regions, whatever their requirements. Symphony Plus builds on and evolves the 30-year-old Symphony automation platform, which is the most widely used distributed control system in the power and water industries. There are more than 4,500 Symphony installations in these two industries alone. They span the entire spectrum of power and water applications in conventional and renewable power generation, and in water and wastewater treatment.

Third, our market and technology leadership in power and automation technologies means that we can offer customers integrated electrical, control and instrumentation solutions for power and water plants. These complete solutions are optimized to maximize the efficiency and minimize the energy consumption of power and water applications. For EPCs they significantly reduce project risk and minimize the number of vendor interfaces to just one.

Fourth, our application know-how in power generation and water is second to none, and our track record in project execution and health, safety and the environment issues is among the best. Our global footprint — we operate in around 100 countries — means that we have local resources and competence in most markets worldwide. This enables us to efficiently partner EPCs in whichever markets they wish to operate in, and provide service support to end users as well.

And fifth, ABB is a technology company with an annual R&D budget of $1.5 billion for developing new power and automation technologies that enable customers to meet these trends and operate successfully in their markets. For EPCs they significantly reduce project risk and minimize the number of vendor interfaces to just one.

You mentioned distribution generation as an important trend. Please explain.

Due to rapid GDP growth in emerging markets there is a growing need for small, scalable distributed power generation systems of between 1 MW and 200 MW generating capacity. These systems use various types of fuel — conventional or renewables - or a combination of the two, as in diesel and solar photovoltaic. Standardized, low-risk, financeable solutions and speed are the key requirements. ABB is uniquely equipped to meet these requirements. We provide standardized, modular, fast-track solutions with rapid delivery and assembly times. Our Symphony Plus SCADA system is developed specifically for them, and our Microgrid Plus System integrates high penetration renewable power into a microgrid, while securing grid reliability and reducing fuel consumption (for more on microgrids see pages 6-11).

How does service tie in with global trends?

Service is a mission-critical business for power and water plants. A service provider has to be close to the plant. Our global footprint means that we are always geographically close to our customers. Our customers, however, also require choice. They want a complete offering of services, but they also want the freedom to tailor this offering into a contract that matches their specific requirements. This is precisely what our ServiceGrid program of life cycle management and support services delivers. We launched it in North America in 2011, where it has been hugely successful. This year we began to roll it out globally. Significantly, almost 100 percent of customers who signed ServiceGrid contracts in the opening 18 months have opted to renew them. That for me speaks volumes about the value that ServiceGrid delivers to customers.
The rise of the microgrid

Microgrids are delivering major benefits to utilities and companies across a wide range of applications all over the world.

Microgrids are small, self-sufficient power grids that serve a self-contained, often isolated entity such as an island, a remote rural community, a university campus, military base, industrial site, mine or municipality. The microgrid can draw power from or supply power to the main grid or it can operate in ‘island-mode.

Remote communities and industrial complexes traditionally rely on diesel-based generation. The emergence of renewables like wind and solar power has brought opportunities for these users to significantly reduce fuel consumption and CO₂ emissions.

Additionally, microgrids can protect consumers from the outages caused by natural disasters like hurricanes and superstorms; they are ideal for rural electrification and access to electricity programs in developing countries; and, the technology needed to make microgrids feasible for everyday use, such as power storage and stabilization, is now available and commercially viable.

The benefits of the microgrid

- Providing power to remote areas
  There are many parts of the world that cannot be reliably supplied by the existing grid infrastructure. For example, a remote mining operation or an island separated from the mainland may not be able to access the main grid at all.

- Hedging against rising fuel costs
  Remote areas are often characterized by high fuel costs driven by transportation costs. Introducing renewable energy with zero fuel cost can reduce power generation operating costs significantly. This applies to all industries and communities located in remote areas.

- Reliability
  When the main grid loses power, the microgrid can switch to island mode. As long as there is an adequate source of power at the local level (diesel generator, wind turbine, fuel cell, photovoltaic solar power, etc), the electricity continues to flow in the microgrid while the rest of the community is enveloped in darkness.

- Meeting renewable targets
  Many countries have ambitious renewable energy targets. Microgrids allow utilities and companies to make pragmatic investments in renewable energy. Microgrids are particularly suited for multistage development projects, permitting the easy addition of renewable power generation units as and when they are needed.

- Improving security
  Utilities and governments need to find ways to protect the grid from natural disasters as well as physical sabotage.
Any prolonged disruption of power, regardless of the cause, represents a threat to security and economic stability.

- **Grid stability**
  Technology advancements in grid stabilization and energy storage have addressed the risk to grid stability from high penetration of intermittent renewable energy. By rapidly absorbing power surges from the renewable energy source, or by injecting power to make up for short-term lulls, a stable voltage and frequency can be maintained in both the microgrid and the main grid.

**Offsetting costs**
Like any capital project, implementing a microgrid involves an investment in infrastructure, including the power sources and the technologies needed to manage and connect the microgrid to the main grid.

- **Greater fuel choice**
  Solar and wind power are ‘free of charge’ fuels and can significantly reduce operational expenses. While wind turbines and diesel generators are probably the two most common sources of power for established microgrids, natural gas, solar, fuel cells and biomass are all becoming increasingly feasible.

- **Lower cost of power losses**
  As much as 6-10 percent of energy is lost in transmission and distribution. Microgrids are local and the power consumed has less distance to travel to the consumer.

- **Additional revenue streams**
  In some regions, energy markets allow microgrid operators to sell the excess power generated. In addition, the heat generated from the source powering the microgrid can be used to create an additional revenue stream. For example, steam might be used to power up additional generators, or hot water could be used for absorption chilling.

- **Flexibility and scalability**
  Finally, the capital expenditure can be spread over several years: the technology allows for the microgrid to develop in stages, adding more generation as needed over time.

**Implementing a microgrid**
Setting up a microgrid is much simpler than building a new coal-fired power plant or nuclear power station. Even so, several steps need to be followed during planning and implementation to ensure maximum efficiency and reliability.

1. **Conceptualizing**
   This is perhaps the most important step for any microgrid project. Project leaders need to define and prioritize objectives. They need to ask questions such as:
   - What is our main objective and what are our secondary objectives: Increasing renewables? Self-sufficiency during times of power disruption? Decreasing the cost of energy?
   - What are our targets? For example, if the main goal is to increase the amount of energy supplied by renewable sources, which sources? By when? By how much?
   - What are our budget constraints?

2. **Modeling**
   The goals set in step one will determine what the microgrid needs to succeed. For example, if the primary goal is to decrease reliance on the central grid by adding a solar array or wind turbines, the microgrid will need to address stabilization and possibly storage as well.
   At this stage, it is important to involve experts like ABB who have experience in helping organizations meet their goals with microgrid technologies. These experts can help design the microgrid and use sophisticated forecasting tools to determine whether the microgrid, as designed, is likely to hit targets.
   Financial modeling is another important part of this step. ABB experts help customers work out the many ‘what if’ scenarios involved, determining the best mix of energy sources and balancing goals against budget and timelines.

3. **Deployment**
   At this stage, all the pieces of the microgrid solution start to come together. However, most microgrid projects are multi-year initiatives and involve the building of some basic infrastructure, such as additional power sources. Working with a company like ABB that provides these solutions and can act as a single point of contact throughout the life cycle of the project can help ensure success.

4. **Stabilization**
   During the final phase, solutions guaranteeing the highest degree of grid reliability are deployed to integrate renewable energy sources and meet load demands and energy requirements.
   Learn more about ABB’s portfolio of microgrid technologies and some customer case studies on pages 8-11.
   new.abb.com/power-generation/microgrids-solutions
Innovative ABB solutions for microgrids

ABB’s Microgrid Plus System is a proven solution that integrates high penetration renewable power into a microgrid, while improving grid reliability and energy efficiency.

Microgrid Plus™ System is built around two core microgrid technologies - the PowerStore grid-stabilizing generator and the MGC600™ controller platform. It is supported by years of microgrid engineering and project execution experience. ABB’s microgrid technologies are best suited for systems of between 300 kW and 50 MW of peak demand.

PowerStore grid-stabilization generator

The PowerStore grid-stabilization generator uses a fast-acting, spinning flywheel to store energy and absorb or inject power onto the grid. PowerStore enables seamless operation of the microgrid. Because PowerStore can switch from a full-power charge to a full-power discharge in less than 5 milliseconds, all the loads contained within a microgrid can be transferred seamlessly between the microgrid’s distributed energy resources (DERs). Temporary power interruptions due to intermittencies from the renewable sources or from the start-up sequences of fuel-based generators will go unnoticed by the microgrid’s end users.

Microgrid Plus control system

The Microgrid Plus control system is based on ABB’s MGC600 controller, and is responsible for the control and communications aspects of the microgrid. The Microgrid Plus control system is decentralized, which means it has no single master controller. It consists instead of many control modules that are distributed across the microgrid area and communicate with each other on a peer-to-peer basis. This arrangement gives the system a high level of flexibility and redundancy.

Microgrid engineering services

Each Microgrid Plus System is engineered to address specific customer needs and achieve operational objectives. ABB’s microgrid engineers can perform energy yield studies, power system dynamic modeling, and protection studies in order to make a technical and financial assessment of the project.

ABB’s advantages

- ABB global support network that can serve almost any project from local offices worldwide
- Extensive experience delivering projects with advanced logistics and strict delivery timelines
- Field-proven solution with more than 80 installations worldwide and decades of operational history
- Proven microgrid solutions that achieve high fuel savings through maximum renewable penetration combined with highest microgrid stability and reliability
- Open, scalable automation solutions with broad application range and maximum project flexibility over the solution’s lifetime
ABB has delivered more than 80 microgrid solutions for a wide variety of applications worldwide. Here is a brief introduction to three of them.

**Faial Island, Azores**

Faial is one of nine volcanic islands in the Azores, a Portuguese archipelago located midway between Europe and North America. This island of 15,000 inhabitants has an electricity network that operates as a self-contained microgrid, powered by six oil-fired generators that produce up to 17 MW of electric power.

The local power utility, Electricidade dos Açores (EDA) recently installed five wind turbines to boost capacity by more than 25 percent and minimize environmental impact on Faial.

The ABB solution controls and monitors the wind turbines and oil-fired generators. It calculates the most economical configuration, ensures balance between supply and demand, maximizes the integration of wind energy and optimizes the generators so that the entire system performs at peak potential.

The integration of wind energy combined with ABB’s innovative solution saves an estimated 3.5 million liters of fuel a year. This has the potential to reduce annual CO₂ emissions by around 9,400 tons annually.

**World’s first high penetration PV/diesel power stations**

**Marble Bar, Australia**

The world’s first high penetration, solar photovoltaic diesel power stations were commissioned in 2010 in the towns of Marble Bar and Nullagine in Western Australia.

The projects include more than 2,000 solar modules and a solar tracking system that follows the path of the sun throughout the day. When the sun is shining, PowerStore grid-stabilizing technology and the Microgrid Plus power management system both ensure that maximum solar energy (100% peak penetration) goes into the network and significantly reduces diesel generation. When the sun is obscured, PowerStore covers the loss of solar power generation by ramping up the diesel generation to ensure that the network has an uninterrupted energy supply.

The solar energy systems generate over 1 GWh of renewable energy a year, supplying 60 percent of the average daytime energy for both towns, saving 405,000 litres of fuel and 1,100 metric tons of greenhouse gas emissions annually.

**Remote and sensitive environment**

**Ross Island, Antarctica**

New Zealand’s Scott Base and America’s McMurdo Station in Antarctica are important research bases and home to about 1,200 people in the Antarctic summer.

The bases have always relied completely on fossil fuels for power and heating, until a new system based on wind turbines, a new distributed control system and PowerStore grid-stabilizing technology were commissioned in 2009. The bases still need back-up diesel generators, but three 333 kW wind turbines reduce the amount of diesel required for power generation by around 463,000 liters and cut CO₂ emissions by 1,242 metric tons per year. They also lower the risks of transporting and storing liquid fuel in this precious environment.

A frequency converter interconnects the Scott and McMurdo bases, which operate at different frequencies - 50 Hz (NZ) and 60 Hz (US), allowing power to flow in both directions.
Integrating renewables in an Alaskan island microgrid

Innovative solution to enable Kodiak Island to integrate more renewable energy and stabilize power supply across its remote and isolated microgrid.

ABB will install its PowerStore, an integrated commercial flywheel technology to integrate with a battery system on Kodiak Island in Alaska to enable the integration of more renewable energy from an expanded wind farm to its microgrid and also to address stability challenges that will arise from a crane upgrade being undertaken to enhance its port operations. The project is being undertaken on behalf of Kodiak Electric Association (KEA), an electric cooperative owned by residents of the Island.

Kodiak Island, off Alaska’s south coast, is the second largest island in the United States. Its population of 15,000 people live in just seven communities, the largest in the port town of Kodiak. KEA operates a microgrid that generates virtually all of its 28 megawatts (MW) of electricity capacity from hydropower and wind.

The City of Kodiak in conjunction with Horizon Lines recently decided to upgrade its existing crane to an electrically driven crane instead of a diesel
Driven one and expand its capabilities. The installation of the larger crane is expected to generate power fluctuations that can be particularly destabilizing for an isolated grid like the one on Kodiak Island. PowerStore’s dynamic response to transient events such as those expected from the new crane as well as the ability to carry out infinite charge and discharge cycles without degrading the PowerStore’s life expectancy make it an ideal fit.

“Expanding the crane operations at the port posed a challenge because it meant that we would likely have to rely more heavily on our fossil fuel-based generators,” said Darron Scott, president and chief executive officer of KEA. “Not only will the ABB solution allow us to shave the peaks off the crane loads, it will also reduce the stresses placed on our battery systems and extend their lifespans.”

ABB’s solution incorporates two 1 MW PowerStore grid stabilization generators that are based on a fast-acting, spinning flywheel with ABB inverters to store short term energy to absorb and/or inject both real and reactive power onto the microgrid. PowerStore can switch from a full-power charge to a full-power discharge in less than 5 milliseconds. Besides providing voltage and frequency support for the new crane, the PowerStore units will extend the life of the two 1.5 MW battery systems and help to manage the intermittencies from the island’s 9 MW wind farm.

“Remote locations like islands may be rich in renewable energy sources, but the intermittent nature makes their integration into the power grid a challenge,” said Claudio Facchin, head of ABB’s Power Systems business. “ABB’s innovative microgrid solution as in this case includes grid stabilization technology that enables high penetration of renewable power generation, and distributed control systems that provide intelligent power management and efficient hybrid power plant operation.”

PowerStore is one of two core technologies comprising ABB’s Microgrid Plus, enabling penetration of renewable energies up to 100 percent and facilitating their integration into a microgrid with a high level of grid stability. The second core technology is the MGC600 decentralized microgrid control system, which consists of control modules distributed across the microgrid area. These modules communicate with each other on a peer-to-peer basis, providing a high level of flexibility and redundancy.

ABB has designed and delivered solutions for more than 80 microgrids worldwide, for a wide range of applications.

new.abb.com/kodiak-island-microgrid

Renewable energy can supply more than 99% of islanders’ electricity needs

Remote locations such as islands may be rich in renewable energy sources, but their intermittent nature makes their integration into the power grid a challenge.
ABB Technology Ventures (ATV), the corporate venture capital arm of ABB, has won the Global Corporate Venturing award in the ‘Sub $50 million investment of the Year’ category for its investment in TaKaDu, a provider of cloud-based integrated water network management solutions.

The awards, now in their fourth year, recognize and celebrate innovation, best practice and service in the corporate venturing sector. Winners were revealed at the awards ceremony in May 2014, as part of the Global Corporate Venturing Symposium, a two-day event focused on innovation, strategy and developments in corporate venturing.

Among others in the running in the Sub-$50m category were Google Ventures, Amex Ventures, Intel Capital, and Nike – further distinguishing ABB as an internationally recognized, innovative and strategic leader.

The investment in Israel-based TaKaDu gives ABB access to field-proven, cloud-based integrated water network management solutions. The solutions leverage big data to transform the way water networks are operated and managed by using innovative algorithms to analyze the raw data generated by the network’s utilities. This provides a real-time picture of how the network is functioning. The resulting insights enable users to make informed decisions across the entire network, from analysts checking for leaks, bursts and pressure problems to management teams identifying challenges and maximizing resource efficiency.

Integrated with Symphony Plus
ABB has integrated the TaKaDu solution with its Symphony® Plus SCADA system to expand the existing information management capabilities of Symphony Plus and to offer a new dimension to the real-time understanding of network data and operations. The combined benefits of the two integrated systems include:
- Increased real-time performance monitoring of the entire water distribution infrastructure
- Reduced levels of non-revenue water and energy consumption
- Improved repair crew operational efficiency thanks to the efficient localization of leakages
- Reduced engineering effort from common data exchange interfaces
- Increased operator efficiency through the display of relevant TaKaDu alarms in the Symphony Plus alarm list, and the capability to interact with the TaKaDu system from the Symphony Plus operator stations

TaKaDu solutions are used by leading water utilities in eight countries. The company has earned international recognition for its environmentally friendly technology, including the Technology Pioneer award from the World Economic Forum in 2011.

Symphony Plus is the new generation of ABB’s highly acclaimed Symphony family of distributed control system platforms. Symphony Plus is designed to maximize the efficiency and reliability of water facilities and water distribution networks through automation, integration and optimization of the entire water life cycle in a simple, scalable, seamless and secure manner.

new.abb.com/water
Optimizing a virtual power plant

An ABB plant optimization solution has helped a young company create one of Germany’s biggest virtual power plants for renewable energy.

The solution enables Next Kraftwerke to pool the production of hundreds of small- and medium-sized renewable energy plants into a virtual power plant (VPP) that has the scale and flexibility to participate in the country’s lucrative ancillary services market.

The solution collects plant production and grid balancing data, performs real-time optimization calculations, and determines the production schedules for each power plant to ensure that grid stability is maintained and plant constraints are observed.

Ancillary grid services are measures that transmission system operators (TSOs) use to maintain a balance between demand and supply. Imbalances can be caused by the failure of a large power plant or large-scale over-production by intermittent energy sources like wind farms.

If an imbalance occurs, ancillary service providers like Next Kraftwerke receive a command from the TSO to increase or reduce output either immediately or within minutes of the command being issued (known as ‘minute and secondary control’). In the case of Next Kraftwerke’s virtual network, the command is received and acted on in real time by the ABB solution.

1,000 power producers

The solution enables Next Kraftwerke to manage more than 1,000 biogas, solar, wind and water plants that are located all over Germany and across all four of Germany’s power transmission grids. Together the plants produce up to 796 megawatts of clean carbon-free balancing power that is vital to grid stability.

Many of the plants are small biogas units that generate electricity from maize and agricultural waste materials. There are several thousand such plants in Germany, most of which are owned by rural municipalities and small private companies.

ABB based the solution on its OPTIMAX® PowerFit plant optimization software, which is part of ABB’s Symphony Plus platform of total plant automation systems for the power generation, water and process industries.

PowerFit provides dynamic optimization across a broad range of applications. These include internal optimization of multi-unit power plants, the optimization of heat and power production in combined heat and power plants, the intra-day optimization of municipal power production and consumption, and the real-time optimization of pools of renewable energy plants like Next Kraftwerke’s.

Rapid growth

Since installing the ABB solution in 2012, Next Kraftwerke has enjoyed rapid growth, and OPTIMAX PowerFit has enabled Next Kraftwerke to comfortably meet this growth. Starting with two redundant servers for 50 plants in 2012, the system now comprises seven servers with geographic redundancy and automatic backup/recovery for up to 1,500 plants.

As a result of its huge success in Germany, Next Kraftwerke is currently looking to expand into neighboring markets where there is good potential for its continued and rapid growth.
Interview with China Resources Power Holdings.

China Resources Power Holdings (CR Power) is one of the largest power generation companies in China. The company produces around 23,300 MW of electricity from more than 70 power plants throughout the country.

Almost half of the power generated by CR Power (more than 10,000 MW) is from units controlled by ABB distributed control systems of the Symphony Harmony family.

One of the most recent is a new 700 MW coal-fired power plant in Yichang. It is the first plant to become operational with ABB’s new HPC800 DIN-rail controllers, part of the Symphony Plus portfolio of total plant automation products and systems.

We asked Liao Xiong, the plant’s instrumentation and control director, for his thoughts on working with ABB and his experience of the plant’s Symphony Plus control system and HPC800 controllers.

“A mature, user-friendly and reliable control system is critical for the smooth operation of the plant. Symphony Plus meets those criteria,” he says.

Please describe your role and responsibilities at the plant.

I am I&C (instrumentation and control) director at the Yichang Power Plant, and am responsible for the management of all matters relating to I&C at the plant. These include safety, product management, technical consultation, equipment reliability, energy saving, maintenance planning, and so on.

Please explain why CR Power decided to invest in a new plant in this location?

The plant is located in Xiaoting, which is a major industrial park in Yichang, Hubei province. There are many factories and facilities in the park that produce textiles, chemicals, construction materials and electronic devices. In recent years, numerous well-known domestic and foreign companies have set up businesses or offices in the park.

Previously, the power and heat requirements of the park were provided by several old power plants that were inefficient and heavy polluters. Our plant replaces these obsolete facilities with a new high-efficiency thermal power plant that improves energy efficiency and cuts greenhouse gas emissions at the park. The plant feeds power into the local power grid, although we are working to change this and trade directly with the companies in the industrial park in the near future.

Would you describe some of the plant’s technical features?

The plant is a subcritical coal-fired plant. The boilers were made by Harbin Boiler Company; they have an efficiency rate of 93.91%. The turbines are manufactured by Dongfang Turbine Company, and have an inner efficiency of 89.6%. The generators are also from Dongfang – the Dongfang Generator Company – and have an efficiency rate of 98.85%. There are 8,200 I/O points in unit 1, and 1,200 hard-wired I/O points for the common system of the two units. Both units are equipped with flue gas desulfurization and selective catalytic reduction systems to minimize emissions.
**Customer Interview**

**Why did you select ABB as your DCS vendor and Symphony Plus as your plant automation system?**

ABB has a good reputation in the global and Chinese power markets, and rich experience in control applications in power generation. Symphony Plus has proved easy to use, operate and maintain, and it supports Chinese characters, which makes it very convenient for users.

In power generation a mature, user-friendly and reliable control system is critical for the smooth operation of the plant. Symphony Plus is a mature technology that meets those criteria. For that reason, and for the excellent service that we have received from ABB in the past, we chose ABB as our DCS vendor.

**Yichang Power Plant has been operating for several months. What is your experience in this short time of using the Symphony Plus control system and the HPC800 controllers?**

The operation of Symphony Plus and HPC800 is going very well. No incidents have occurred since we started full production in March 2014.

We’ve had some teething problems with frequency faults in the software. And we found that too many people had access rights to the human machine interface, which could have led to mistakes. But these have been rectified. When difficulties occurred ABB assigned the necessary engineers onsite speedily, and provided great support during commissioning. We appreciate the good work that the ABB engineers performed.

ABB has supplied plant automation systems for 18 power plants owned by CR Power. Together these plants generate more than 10,000 MW of electricity. What is your company’s experience of using these plant automation systems?

I can only speak for my area of responsibility at the Yichang Power Plant.

**The ABB solution for Yichang Power Plant**

Symphony Plus total plant automation system for 2 x 350 MW units and 9,400 I/O points. The solution includes:
- S+ Operations human machine interface
- S+ Engineering unified engineering workbench
- HPC800 controllers
- S800 I/O system
- Control room

ABB was also responsible for design, engineering, commissioning support and testing, and has supplied a broad range of electrical products for the plant.

But from what I understand, ABB has supplied the distributed control systems for some of our largest and most modern plants in China – subcritical, supercritical and ultra-supercritical. The ABB control systems range from INFI 90 to Symphony Harmony and now Symphony Plus. Several of these projects are ongoing, so I assume that the relationship between CR Power and ABB on a national level is as good as the one I have experienced on a local level in Yichang.

**Symphony Plus is ABB’s plant automation system for conventional and renewable power generation and water applications worldwide. It builds on the 30-year evolutionary history of the Symphony family – the most widely used DCS in the power and water industries.**
China’s power generation companies have long favored distributed resources. Power Holdings and Shenua Group are three of the most prominent.

ABB to automate China’s largest clean coal power project

Wanzhou Power Plant is part of a huge $3.77 billion investment that Shenhua Group, the world’s largest coal company, is making in new power generation and coal storage complex on the banks of the Yangtze River in the city of Wanzhou.

Wanzhou is part of Chongqing Municipality, one of China’s fastest growing regional economies. Chongqing registered 20.4% percent growth in gross domestic product (GDP) in 2012, the second highest in the country. It also has a large power deficit of more than 4,000 megawatts (MW).

Filling this power deficit is vital to the future growth prospects of Chongqing. One of the most important projects in the municipality’s current five-year plan is the Wanzhou Power Plant complex. When completed, the complex will consist of six 1,000 MW ultra-supercritical power plant units, a 10,000 metric ton coal storage base and an unloading wharf on the Yangtze. It will be the largest clean coal power plant in China.

Phase 1 of the project will comprise two 1,000 MW ultra-supercritical units. Each unit will operate at the highest possible efficiency level of 45-48 percent and have a low pollution level that complies with United Nations CDM (Clean Development Mechanism) standards.

For this world-class power plant, Shenhua Group required an automation system capable of handling one of the largest PROFIBUS fieldbus installations in China. “Our goal is to build a highly integrated and completely automated power plant operating at the highest level of efficiency, with low emissions and a high rate of profitability,” says Zhou Sen, Thermal responsible of Wanzhou Power Plant. “Following an assessment and market comparison of its capacity and capabilities, we found that Symphony Plus will best help us to meet those requirements.”

The Symphony® Plus solution will monitor, control and optimize the entire production process at the first two units of the complex – from the boilers, turbines and generators to the desulphurization and emission monitoring systems, electrical systems and balance of plant, including the water treatment and coal transportation systems.

The solution is based on ABB’s HPC800 process controllers and PDP800 PROFIBUS interface modules. It will provide Shenhua Group with a highly integrated plant-wide automation system

Chongqing Municipality has a population of around 30 million and is one of China’s fastest growing regional economies. Electricity from the Wanzhou Power Plant will solve the municipality’s current power shortage.
Projects

Choose Symphony Plus

ABB in control systems of the Symphony family. Recent orders from China recent.

Haifeng ultra-supercritical power plant

ABB has been selected by China Resources Power Holdings Company, one of the biggest power companies in China, to supply Symphony® Plus total plant automation systems for two 1,000 MW units at the Haifeng Power Plant in Guangdong province.

The two units constitute phase 1 of a project that will eventually comprise eight 1,000 MW units. Each of the two ultra-supercritical units will operate at very high levels of efficiency, reliability and availability.

The Symphony Plus solutions will monitor and control the entire production process at the first two units, from the boilers, turbines, and generators to the desulphurization and emission monitoring systems, electrical systems and balance of plant, including the water treatment and coal transportation systems.

The solution is based on ABB’s high-performance, high-capacity HPC800 process controllers. It will provide Haifeng Power Plant with tighter and more reliable process control and greater visibility of plant operations for all users of plant data. HPC800 will also lower the system installation and maintenance costs through its small footprint, reduced field wiring, simplified and repeatable engineering, and shorter project schedules.

The first unit is scheduled to start operations at the end of 2014.

Anqing clean coal project

ABB has won a contract from China Shenhua Group to supply Symphony® Plus total plant automation systems for two 1,000 MW coal-fired units at the Anqing Power Plant in Anhui province, China.

Anqing is a transportation center located midway between Shanghai and Wuhan on the Yangtze River. The city is undergoing rapid economic development and has a huge shortfall in power generation that the two units will help to reduce.

Anqing Power Plant comprises two phases. Phase 1 consists of two 300 MW units, which have been in operation since 2005. In addition to the two new 1,000 MW units, phase 2 consists of a coal wharf with an annual loading capacity of 6 million tons.

The two units are scheduled to start production in December 2014 and February 2015 respectively.

With more than 6,500 systems installed over more than three decades, the Symphony family has one of the largest installed bases of distributed control systems in the world.

that has a unique capacity to manage intelligent field devices in large fieldbus installations of this size and complexity.

Symphony Plus is ABB’s flagship automation platform for the power, water and process industries. Designed to meet a wide range of plant configurations, its flexibility and scalability make it ideal for small and server-less applications as well as for large multi-system, multi-server architectures. It supports the seamless integration of field devices, process and turbine automation systems, electrical and SCADA (supervisory control and data acquisition) solutions as well as business and maintenance systems, providing a secure and reliable control environment.

Unit 1 of the Wanzhou Power Plant will start production in December 2014 and unit 2 in February 2015.
A shift from polluting coal-fired stoves to a single district heating system will set a new standard for energy efficient heat production in Shangri-La County in China. The heating solution will also help to reduce air pollution and improve the quality of life of Shangri-La’s residents.

Located 3,300 meters above sea level in the northwest of Yunnan Province, Shangri-La sees variations in daily winter temperatures ranging from as low as minus 27 to one degree Celsius. To ensure the needs of the residents are met, five local SCADA control systems will communicate with a central control and monitoring system to manage heating delivery in the most efficient way. The integrated SCADA control system for each boiler house (one in each of the five districts in the area) will use the heat pumps as the base load and the boilers as modulating producers to provide heat as required.

“ABB’s automation and electrical solution interconnects and monitors the new heating plants for maximum efficiency, which will help to provide a safe, reliable heating for about 50,000 residents,” says Massimo Danieli, head of ABB’s Power Generation unit, a part of the Power Systems division. “In addition, ABB will supply air-source heat pumps to move from individual heat-only boilers and stoves to boilers based on electricity. The pumps will boost the system’s energy efficiency and help improve quality of life substantially by reducing coal-fired emissions.”

The environmental benefits are expected to be substantial; reducing coal burning by an estimated 17,000 tons a year, which is approximately the equivalent of 105,000 tons in annual carbon dioxide emissions.
ABB has been entrusted by IBERDROLA Engineering and Construction to provide a turnkey power and automation solution for the Lichterfelde combined heat and power (CHP) plant in Berlin, Germany. The plant is owned and operated by Vattenfall, one of Europe’s leading power utilities.

The German government has set a target to increase the amount of power generated by CHP plants in the country’s energy mix from 13 percent to 25 percent by 2020 as part of its Integrated Energy and Climate Change Program to reduce greenhouse gas emissions.

The plant will be fueled by natural gas and have the capacity to produce 230 megawatts (MW) of heat and around 300 MW of electricity for some 100,000 homes in Lichterfelde, a suburb of Berlin. The new facility will replace an existing CHP plant that was built more than 40 years ago on the same site. By using state-of-the-art power and automation technologies, the new plant will target a fuel efficiency of up to 85 percent and aim to reduce carbon dioxide emissions by more than 100,000 tons a year compared to the old plant. Production at the new facility is scheduled to start in 2016.

“Our portfolio of optimization technologies, our domain expertise and track record is enabling power generation plants all over the world to operate at benchmark levels of efficiency and reliability” said Massimo Danieli, head of ABB’s Power Generation business, a part of the company’s Power Systems division. “We are pleased to support Germany’s efforts to meet its electricity needs while minimizing environmental impact.”

ABB will supply a fully integrated control, electrical, instrumentation and mechanical solution that will enable the plant to produce heat and power energy efficiently and respond rapidly to changes in demand from the local power distribution and district heating networks.

The solution comprises an integrated control system based on ABB’s Symphony® Plus total plant automation system, and a wide range of ABB products such as step-up transformers, generator circuit breakers, power protection equipment, switchgear and auxiliaries. ABB will also supply the electrical balance of plant and mechanical systems such as the pressure reduction station, gas compressor, fire protection and the compressed air system. ABB’s turnkey project scope includes design, engineering, installation, system integration and commissioning.

More heat and power for Berlin

Power and automation solution will optimize production and minimize greenhouse gas emissions at new high-efficiency combined heat and power plant in Berlin.
ABB’s Generator Control integrates protection, excitation, synchronization and control in a single standardized module. A solution for a 25-year-old unit at a small municipal hydropower plant in Switzerland exemplifies Generator Control’s many benefits.

Arosa Energie is a small independent municipal energy company with just 23 employees. Its task is to generate and distribute electric power to the municipality’s 2,800 inhabitants in Switzerland. The company operates two hydropower plants - Lüen and Litzirüti – which have a combined output of 12 MW.

The Lüen hydropower plant comprises three Pelton turbines, two of which are 100 and 86 years old respectively. The most recent of the three was installed in 1990, and was recently in need of modernization. ABB was contracted to modernize the generator control and regulation systems of the 3.7 MW unit and retain the 25-year-old control cabinets as part of the solution.

The solution is based on ABB’s Generator Control, which combines excitation, protection, synchronization and control in a single, standardized module. It integrates three highly success-
ful ABB product families - UNITROL (excitation), Relion (protection) and SYNCHROTACT (synchronization) - all undisputed market leaders in their respective areas. ABB installed the solution onsite in the existing cabinets; it included an easy-to-read control system on a 15-inch touch panel.

Fast and efficient installation
Prior to installation, ABB experts in Baden, Switzerland, had engineered the solution and prepared the module ready for delivery. On October 1, 2013, Arosa Energie shut down the Lüen power station. The installation work and inspections were completed within two weeks, despite an early outbreak of winter that briefly blocked access to the power station.

On October 17, the unit was started up again at rated speed and on October 18, the commissioning tests were completed. That same evening the generator resumed commercial operation.

ABB was able to successfully modernize the generator control system in such a short time thanks to the following four factors:
– Excellent collaboration with the customer
– Use of a standardized solution
– Use of experienced project personnel
– Lean project organization

Generator Control is an integrated solution that covers all the control requirements of small to large generators for hydro, industrial and utility power plants. It is highly modular and can be easily adapted to meet customer requirements. The solution package includes an interface with the plant’s distributed control system and a local operator interface.

Electric power for Arosa
Arosa Energie is an independent company with 23 employees and is owned by the municipality of Arosa. Its core business is to produce and distribute electric power and to ensure a reliable power supply. Its retail supply area takes in the municipality of Arosa.

Arosa Energie operates the Lüen and Litzirüti power stations, which have a total output of 12 MW.
ABB is providing a fully integrated instrumentation, control and electrical solution for a hydropower plant upgrade in Canada.

ABB will complete a retrofit on one of six turbines at the 129 MW Jenpeg hydropower plant on the Nelson River in Manitoba province, Canada. Owned and operated by Manitoba Hydro, Jenpeg also regulates the outflow waters of Lake Winnipeg for power production at the company’s Nelson River generating stations.

ABB is supplying a customized and fully integrated instrumentation, control and electrical (ICE) solution for Unit 1 of the Jenpeg generating station, which is expected to be back in full operation by September 2015. ABB will also support Jenpeg with a portfolio of life cycle services, including spare parts and equipment repair, training, remote monitoring and technical support.

“We are pleased to be working again with Manitoba Hydro and to be able to provide ABB innovations for this challenging project,” said Massimo Danieli, head of ABB’s Power Generation business, part of the Power Systems division. “ABB is a single-source provider, and brings a collaborative approach and tailored solutions to our power generation customers.”

Customer collaboration

Manitoba Hydro needed a solution to replace old equipment and modernize its system. ABB and Manitoba Hydro worked closely on the design and customization of the project to ensure a similar footprint and optimized performance of the restored unit. The ABB solution will help Manitoba Hydro reduce exposure to technical and commercial risk, eliminate multivendor interfaces and improve resource leveling.

ABB’s scope of supply includes a full excitation system, relay-based control and synchronization, a protection system, a customized medium-voltage generator terminal cubicle and ABB HVR generator circuit breaker, ABB governor controller and manifold, and power control cables.

ABB was selected for the retrofit because of the depth of its automation and control solutions for the hydropower industry. ABB’s ability to supply a customized generator terminal cubicle with a small footprint generator circuit breaker are key parts of the solution.

In addition, existing equipment will be assessed and reused wherever possible.

ABB is also responsible for engineering (including system studies and unit design), electrical installation and commissioning.

Completed in 1979, Jenpeg is the first generating station in North America to use bulb-type turbine generators (called units) – a European design developed to harness a low operating head, which is the waterfall created by the generating station’s structure. The bulb-type unit is positioned horizontally and is set directly in the stream of water flowing through the intake gates. The design does not require as deep a pit in the ground as conventional vertical units, which eliminates the need to excavate deeply into the bedrock under the river.
ABB has successfully delivered and commissioned a complete electrical balance of plant (EBoP) solution, including the retrofit of a 132 kV substation, for the 412 MW New Haripur gas-fired power plant in Bangladesh.

Located in Haripur, on the outskirts of the capital city Dhaka, the plant is owned and operated by Electricity Generation Company of Bangladesh (EGCB) Ltd. The project is part of the country’s efforts to accelerate the development of its power infrastructure to boost capacity and strengthen its transmission network, helping to meet the growing demand for electricity.

The ABB solution consists largely of standardized and factory-tested modular components to minimize engineering time and delivery schedules. These include a 132 kV air-insulated substation retrofit with 28 bays, a new 33 kV gas-insulated substation, auxiliary and distribution transformers, generator circuit breakers and medium voltage switchgear.

ABB also supplied a 570 megavolt amp (MVA) three-phase power transformer, which is one of the most powerful in Bangladesh. It is designed with two primary circuits and weighs 420 metric tons. The transformer will step up the power from the gas and steam turbine generators to 132 kV and feed it into the national grid for transmission to Dhaka, Chittagong and other cities in Bangladesh.

ABB’s project scope includes the design and laying of three 132 kV cross-linked polyethylene (XLPE) underground power transmission cables, each 1.5 kilometers in length. Temporary diversion of the existing transmission line was done to ensure no loss of generation and simultaneously permit rehabilitation works.

As part of the retrofit scope, ABB recreated the as-built drawings of the 30 year-old substation to maximize the re-use of existing materials and equipment. ABB upgraded the 28 bays from 40 kA to 63 kA in just 16 months, without impacting the generation and distribution of power and with zero incidents.

ABB was responsible for design, engineering, supply, installation and commissioning of the entire solution.

“New Haripur power plant project is by far the most challenging job technically we have seen so far, due to the fact that the substation was constructed 30 years ago and was lacking proper documentation. ABB managed to execute it professionally and tactfully, overcoming all challenges. This is also the first project in Bangladesh which is executed on schedule, thanks to the dedicated and competent team.”

Mostafa Kamal, Managing Director of EGCB
Helping Egypt to generate much-needed power

ABB is delivering a plant control and optimization solution to ensure reliable and cost-effective production at a new thermal power plant in Egypt.

ABB has won an order from East Delta Production Company (EDEPCO) to provide a distributed control system and plant optimization solution for the new Suez Thermal Power Plant in Suez, Egypt. EDEPCO is one of five regional utilities owned by the Egyptian Electricity Holding Company, which is responsible for the generation, transmission and distribution of electrical energy throughout Egypt.

The gas and oil fired power plant will have a generating capacity of 650 MW of much-needed electric power. Electricity consumption in Egypt has been growing by an average of 7 percent annually since 2000. Outages are frequent in many parts of the country due to the high level of demand. Suez Thermal Power Plant will alleviate the pressure on power supply by increasing Egypt’s generating capacity by a significant 2 percent.

ABB has been supplying distributed control systems to EDEPCO and the other four regional utilities for the past 30 years. Around one in four of the country’s 70 power plants are equipped with ABB distributed control systems. Together these 22 plants produce 12.5 gigawatts of electric power, which is around one-third of the country’s capacity.

“We are delighted to have once again been selected by EDEPCO for this important project,” says Massimo Danieli, head of ABB’s power generation business, a part of the company’s Power Systems division. “Our control and plant optimization solutions have a long record of reliable and cost-effective operation, both with EDEPCO and the Egyptian Electricity Holding Company.”

The solution comprises a state-of-the-art ABB distributed control system that will control the entire power generation process at the plant. The simple and scalable system architecture will provide EDEPCO with a control platform that they can easily and cost-effectively evolve as their automation and business requirements change over time. Integrated with the control system, the plant optimization package will enable EDEPCO to maximize plant performance and manage plant assets efficiently. ABB is also responsible for design, engineering, commissioning and training.

Suez Thermal Power Plant is currently under construction and scheduled to start production in 2015.

Around one in four of Egypt’s 70 power plants are equipped with ABB distributed control systems.
Dubai’s industrial flagship chooses ABB control systems

ABB is delivering a new distributed control system for the desalination plant at the Dubai Aluminium (DUBAL) smelter complex in Dubai. The solution is one of several that ABB has recently provided for this vast power, water and production complex, widely considered the industrial flagship of Dubai.

DUBAL operates one of the largest single-site aluminum production complexes in the world.

Built on a 480 hectare site, the state-of-the-art smelter complex comprises 1,573 reduction cells arranged in seven potlines, a 2,350 megawatt power plant, a desalination plant that produces 113.5 million liters of distilled and potable water a day, and various other facilities including a carbon plant, casting houses and port. The smelter produces more than 1 million tonnes of molten aluminum a year.

ABB has a large installed base of control systems at the complex, and has been a supplier of choice throughout DUBAL’s 34-year history. In fact, ABB’s Procontrol P14 and Advant systems are at the heart of the site’s power generation and desalination processes. Between them, the two automation platforms control most of the gas and steam turbines and boilers at the power plant, as well as the steam turbines and pumps at the desalination plant.

In the past few years, DUBAL has awarded ABB several contracts to upgrade or maintain the Procontrol and Advant control systems that monitor, control and optimize the performance of the steam turbines, gas turbines and boilers at the DUBAL power plant.

After experiencing the performance of the upgrades and ABB’s project execution capability and commitment, DUBAL decided to replace the existing third-party distributed control system at the site’s desalination plant with ABB’s Procontrol P14.

In switching to Procontrol P14, DUBAL is set to gain a raft of operational and cost benefits. Procontrol P14 is renowned among operators for its ease of navigation. It has one of the fastest response times of any distributed control system on the market and one of the best track records in mean time between failures (MTBF).

This results in faster operator decision-making, improved plant availability and minimal maintenance and spare part costs – all of which are key DUBAL requirements.

ABB is responsible for the design, engineering, integration testing, installation and commissioning of the solution. ABB has already installed Procontrol P14 at two of the desalination plant’s six units.

Continuous evolution is the hallmark of an ABB control system - it protects the customer’s investments in hardware, software and staff expertise over the life cycle of the plant.
Sales and R&D are natural partners

Even great products don’t just sell themselves – that takes people and planning, which is why sales strategy, training and product information were key focus areas of the Annual Symphony Plus Marketing and Sales Event, which was held in Genoa, Italy, in February.

Designed to accelerate the spread of ABB’s Symphony® Plus automation products and technology to new applications and markets, the four-day event drew about 120 people from 34 countries to ABB’s Genoa offices.

Attendees found an information-rich agenda spanning the world of Symphony Plus, from overviews of power generation market trends, focus areas, technology status and progress to discussions of specific products and applications for the power generation and water industries. Presentations in both plenary and break-out sessions included in-depth analysis of market trends and needs, sales arguments and best practices.

There is an important educational component to this annual event, during which the sales team has an opportunity to get first-hand information from specialists, developers and management about market trends and the technology development roadmap, as well as an in-depth view of new products or developments in the existing automation offering. It is also an occasion for frank discussions of strategy.

From exploring the latest developments in ABB’s automation platform to sharing successes and strategies with colleagues, the event was designed to strengthen and support ABB Power Generation’s sales networks, and ensure they are connected to technology development and product management.

Two sides of the same coin

It is also a chance for R&D to give feedback on suggestions and market requirements provided by the sales team. Sales and R&D are two sides of the same coin, and need to work closely together sharing information about market desires and needs, technical feasibility and technology development. When these areas mesh, successful products are developed. A good example is the ascendance of renewable energy and distributed power generation schemes, which have very different requirements from traditional, centralized power generation and distribution. New products will soon be launched and existing offerings will continue to be enriched with dedicated functionalities to meet this changing need. This includes not only automation products, but also solutions such as integrated instrumentation, control and electrical packages.

R&D investment is essential not only for a company to remain competitive, but to make customer assets competitive so customers can win their own market challenges. (ABB invested more than $1.5 billion in R&D in 2013).
Reliability, availability and efficiency are key factors in the power generation business. To achieve the highest possible levels in all three requires not only high-quality products, but well-trained personnel who can maximize power plant output in all conceivable operating scenarios.

ABB offers extensive education and training programs for power generation customers and ABB personnel at locations all over the world. Courses range from process and product theory to engineering and software development. They include hands-on training for operators and for engineering, commissioning and maintenance personnel.

Training can be structured according to specific customer requirements - as refresher courses for experienced personnel, basic training for new staff, or training for new platform solutions and products. Our training staff are experienced in engineering and commissioning, and have passed an ABB train-the-trainer program. The learning centers’ modern classrooms are equipped with training models and simulators to provide hands-on training and ensure successful knowledge transfer.

ABB also provides practice-oriented on-site and off-site courses covering specific customer needs and requirements.

Please find the full course schedule and updates including administrative details for all ABB University activities at www.abb.com/abbuniversity.
Visit ABB’s new power and water portals

ABB has launched two new Web portals for the power generation and water industries. They are part of a huge renewal of the entire ABB Website that is making it an easier, more collaborative and appealing experience for customers to use.

ABB is modernizing www.abb.com to make it a faster, easier and more satisfying user experience.

The project is in the form of a migration from a Web platform that ABB has used since the 1990s to a new state-of-the-art platform with interactive communications and high-quality, responsive browsing via all types of device - smart phones, tablets, laptops and desktop computers.

The migration is huge by any scale. Around 500,000 pages and 72 country sites are being redesigned, rewritten and relaunched to make it easier for customers to find what they are looking for in ABB’s vast product and service offering.

An important objective of the project has been to remove pages that are rarely visited and make navigation a more streamlined and rewarding experience.

The ABB home page is already one of the most widely visited in the industry. It attracts around 90,000 visits a day and 120 million page views a year. Many of these visits are to the power generation and water portals.

Knowledge resource

“Our power generation and water portals are often the first point of contact that customers have with us,” says Stefania Mascheroni, communications manager for ABB’s power generation business, a part of the company’s Power Systems division. “We want that first experience to be positive. We also want the portals to act as a knowledge resource and first port of call for existing and prospective customers.”

Compared to the old power generation and water portals, the number of pages has been cut by about 50 percent, from around 300 to about 150. Once on the portal landing page visitors have an intuitive overview of the main sections and tiles of the page: offering, applications, downloads, references and – most importantly – the ability to quickly contact an ABB salesperson.

In addition the new portals are rich in case studies, blog posts, reports, white papers, videos and social media content.

The new ABB Website was recently recognized internationally for setting new benchmarks in Web experience.

Visit the new portals at:
www.abb.com/powergeneration
www.abb.com/water
Join the conversation on the trends and technologies shaping a better world

ABB Blogs

All in a day’s work if you plan ahead and manage your assets properly
Who said that Asset Management is only for Fieldbus?

Collaborative engineering on an app store?
Could the concept of collaborative automation engineering platforms be as simple as an app store? With flexible engineering, the sky is the limit.

Space age renewable energy plans should not eclipse our work here on Earth
New and old routes of renewable energy

Ready, steady, go!
In increasingly more competitive power markets, service solutions are key to winning the race.

When gambling is not an option
Guessing is for gamblers, not plant operators. It is essential that the people in charge of a control system know exactly what to do.

An energy-efficient menu for the power and water industries
Stay profitable with assets that perform.

Flexible solar power solutions are ideal for remote generation sites
A distinct advantage of solar power generation is its design flexibility.

How to integrate wind into a microgrid
The remote Outback regions have made Australia a great proving ground for some important microgrid technology.

You will find the blogs while browsing the conversations page www.abb-conversations.com under the power and renewable energy categories
Did you know?

Refrigerators in the United States consume about the same amount of energy as large power plants produce each year.

If a person yelled for 8 years and 7 months he or she would produce enough energy to heat one cup of coffee.

Germany accounted for nearly one-third of global solar PV capacity at the end of 2012.

A hurricane releases between 50 trillion and 200 trillion watts of heat energy. This is as much energy as a 10-megaton nuclear bomb exploding every 20 minutes.

The sun provides as much energy in 1 hour as the world consumes in one year.

The amount of sunshine in Texas in one month contains more energy than all the oil and gas ever produced in the state.
ABB is a leading provider of integrated power and automation solutions for conventional and renewable-based power generation plants and water applications. The company’s extensive offering includes turnkey electrical, automation, instrumentation and control systems supported by a comprehensive service portfolio to optimize performance, reliability and efficiency while minimizing environmental impact.

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Publisher
ABB Ltd
Business unit Power Generation
P.O. Box 8131
8050 Zurich / Switzerland
Phone +41 (0) 58 585 39 56

Subscription
For a printed or electronic subscription, please contact the editor or subscribe online at www.abb.com/powergeneration or shoot the code with your smart phone

Circulation
Electronic issue 3,500
Printed issue 6,000

In Control is published periodically by ABB Power Generation and is available in printed and electronic versions. In Control is free of charge to those with an interest in ABB’s power generation and water business.

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Flexible service solutions that improve plant performance?

Certainly.

With more than 125 years of technology innovation and experience in conventional and renewable based power generation and water applications, ABB has the know-how and track record which makes us the ideal partner to rely on. Our portfolio includes integrated electrical, automation, instrumentation and control solutions that help optimize performance, improve reliability, enhance efficiency while minimizing environmental impact. A worldwide service capability supports your plant throughout its life cycle. www.abb.com/powergeneration