Power Generation Service
Comprehensive solutions for power generators
Power Generation Services

High performance services and solutions for the generation life cycle

Profound changes sweeping the power generation sector today are altering the relationship between customers and automation suppliers.

Power generation customers need more than just a supplier of spare parts, on-site work, repairs, and system upgrades. By developing deeper ties and an integrated, partnership approach with customers, ABB can help them operate their plants more efficiently, reduce costs, plan better long-term operational solutions, and ensure protection against unplanned events.

Distilled from many decades of ABB experience in the power generation sector, ABB power generation services provides customers with best practices and solutions in such areas as life cycle management, diagnostics and sustainability solutions, cyber security, and process optimization.

Our philosophy is simple: we protect your investment through the stepwise evolution and upgrading of your electrical, control and instrumentation systems to minimize the consumption of energy, prolong asset operating life, and minimize the cost of ownership.

ABB services helps extend asset life, complements technical resources, protects financial and intellectual investments and maximizes plant performance and availability for all segments of the power generation market, including independent power producers, investor owned and publicly owned utilities and industrial power providers.
Power Generation Care
Life cycle service solutions for power plants

Power plants have three service needs in common: day-to-day maintenance, performance optimization and lifetime extension. Power Generation Care is designed to fulfil these three common needs, regardless of plant application or location. It covers the entire portfolio of ABB products and systems for power generation facilities including distributed control systems, instrumentation and electrical balance of plant.

Performance and reliability
Some power generators want to maximize output, others want to ensure reliability. Power Generation Care delivers on both fronts by helping you get the most out of your plant, people and process. Through fingerprinting and benchmarking we help you identify which parts of the process are most at risk or which categories of staff are most in need of skills improvement.

Operational improvement
Power Generation Care includes solutions for the optimization of the plant’s automation and electrical assets and the production process. These range from continuous monitoring of turbines, rotating machinery and other critical equipment to identifying the first signs of equipment degradation or deteriorating plant performance.

System life cycle
Distributed control systems thrive on life cycle management and long-term service plans that evolve the system in small, incremental steps. Regular scheduled upgrades enable the DCS to run optimally and keep up-to-date with the latest technologies and functionalities. This takes the guessing out of cost control and brings budget stability and predictability.

Cyber security
Power Generation Care includes an integrated suite of security applications and tools for assessing and strengthening DCS cyber protection. These include fingerprinting to gauge the ability of the DCS to withstand attack; patch delivery to evaluate all software updates from Microsoft and other vendors for relevance and system compatibility; application whitelisting to ensure that only approved software and processes are allowed to run; and file sanitization to minimize the risk of introducing an infected file into the control system.

Maintenance and sustainability
Power Generation Care has the flexibility to meet the maintenance and budget requirements of plants with very different needs. Some plants may have 15 or 25 years of production left and be committed to life-cycle management. Others may have only 2 or 3 years of life remaining and be running on a ‘fix it only when it breaks’ basis. Our service strategy and maintenance kits are designed to take advantage of planned plant outages.
Life cycle management

Today’s demands on network availability, efficiency and capacity are increasing continuously. In many cases, the systems from earlier technology generations can’t meet these new requirements. This is our challenge and we can solve it by utilizing our portfolio, which includes consulting and engineering activities at all stages of a plant’s life cycle. It is important that maintenance activities or retrofits are carried out professionally according the actual needs for life cycle performance.

ABB power generation services lifecycle management maximizes equipment value and maintenance investments over the long term.

Extending the usable life of your existing assets simply makes good fiscal sense. Determining what it costs to operate and maintain your equipment effectively is paramount to deciding how long to keep it, how much to invest in and when it is time to upgrade.

What do plant owners expect from their service investments?
Our research and experience show that plant owners require three main returns from their service investments.

The investments should:
1. Maintain production at the plant and avoid downtime;
2. Maximize the lifetime of the plant at the required level of performance by an additional 5, 10, 20 or 30 years; and
3. Optimize the performance of the plant, equipment and staff.
ABB’s commitment to ‘Evolution without obsolescence’ provides plant owners with the ability to extend the operating life of their control systems and improve the profitability of their investments through seamless evolution, thus avoiding the costs and risks associated with ‘rip-and-replace’ upgrade methods. ABB’s evolution approach offers plant owners the flexibility to upgrade the DCS in accordance with their business and plant operational needs rather than on component obsolescence.

ABB’s evolution program supports a stepwise approach in which components or process areas are upgraded individually as required during either normal operations or as part of scheduled maintenance activities, while leaving the rest of the system undisturbed.

These options utilize the system to its full potential. Evolution alleviates the need for large capital investment and the resultant cash flow impact associated with alternative approaches that require a major outage and cost-intensive engineering, design, and construction efforts. Perhaps the most significant benefit of ABB’s evolution concept is that it mitigates the risks and costs associated with poor design quality, resource allocation, plant trips, lost generation, project overruns and commercial/legal issues.
Cyber security

ABB power generation services tailor cyber security solutions that enhance reliability, automate compliance efforts and minimize security risks according to the individual needs of power generation customers.

In a power plant, cyber security issues can put your operations at risk. ABB can assist with solutions to meet the cyber security needs of your plant’s distributed control system (DCS).

**ABB cyber security solutions** provide a unified view for proactive security, increased system reliability, reduced system vulnerability, improved capacity to define and monitor change management processes, and a simplified regulatory compliance tool. Our comprehensive solution suite offers:

**Advanced “Compliance” based solutions** – delivering cyber security assessment and remediation services before, during and after implementation of cyber security solutions. Security Workplace – providing an integrated suite of supported security applications and tools certified for use on your plant DCS.

**Security Patch Solutions** – delivering tested and validated Microsoft security updates and antivirus definition updates for supported ABB platforms monthly.

**Security Fingerprint** – identifying strengths and weaknesses in control systems to defend against a cyber-attack.
Training and learning

ABB’s power generation training centers provide world class learning services to help you get the most out of your control system. A wide range of instructor-led courses are available to fit a variety of customer needs.

Training develops the knowledge, skills and experience to ensure that control system issues that might occur in your plant are resolved quickly, correctly and safely.

Power plant professionals are developed through comprehensive training programs involving both theory and practical sessions. Advanced training available through Symphony Plus simulation together with S+ Operations develops proficient operators trained to master plant processes and improve decision-making in safe, realistic virtual plant environments. Evaluating plant operations with simulated testing, pre-tuning and pre-training can also dramatically reduce commissioning costs.

ABB’s power generation training provides world-class learning services in state-of-the-art ABB classrooms, or at your site. Our classrooms are used for training programs for engineers, programmers, maintenance and operations personnel. We offer training for ABB products, processes, applications, and general technology, as well as training course bundles and training assessment programs.
Plant optimization solutions

ABB power generation services provide a suite of optimization solutions for power generation plants. These solutions are designed and implemented to enable the plant to balance revenues, asset lifecycle costs and emissions, and run at maximum efficiency; maximum productivity.

ABB process optimization solutions consist of proven, continuous improvement methodologies, special tools, and deep knowledge of systems and processes to identify and develop improvement opportunities.

Balancing input and output
Model predictive control (MPC) tools lie at the heart of optimization. MPCs employ a set of algorithms (multivariate mathematical equations) to simulate the complex interactions within plant components; these models can be built in a number of ways.

Condition monitoring supported
Optimization systems also support condition monitoring, helping to detect problems early and isolate their causes. That might mean detecting performance losses in thermal equipment or alerting operators to vibration problems in rotating machinery. Condition monitoring improves plant availability by avoiding unnecessary shutdowns.
Plant control solutions

ABB’s power plant automation systems are based on field-proven control platforms. In order to serve power generation requirements for plant control and optimization, specific products and applications have been developed.

ABB Power Generation Services manages new product enhancements and application improvements to your existing ABB DCS installation.

In many power generation facilities, the DCS capabilities can be extended to fully operate processes such as ash handling, coal handling, soot blower management, HRSG duct burners, auxiliary boiler systems and water treatment. This enables the control systems operators to efficiently manage these critical functions.

A comprehensive portfolio of stand-alone solutions are available for turbine control, turbine hydraulics, and burner management systems. Enhancements for operator stations, alarm management, and information management are available.

Combustion instruments, condition monitoring and simulator systems complement the suite of solutions.

Supported ABB distributed control systems include:
- Symphony Plus,
- Symphony (Harmony, and Melody),
- DCI System Six,
- INFI90,
- System 800xA for Power Generation,
- Freelance,
- Procontrol (P14 & P13),
- SATT,
- Advant OCS (Master and MOD300).
**Electrical services**

ABB’s electrical services for power generating facilities lower project risk, shorten project execution time and minimize overall project cost.

Diligent maintenance of the power infrastructure safeguards asset value, optimizes system performance and reliability, and ensures continuous power delivery to all operations. Risk reduction is a major component of value offered in integrated electrical, control and instrumentation systems.

ABB can deliver customized solutions meeting the operational and maintenance needs in all kinds of substations in transmission and distribution grids, as well as industrial power supply systems for all types, makes and generations of components.

Choosing ABB for your electrical services requirements provides you with the following benefits:

**One stop world-class supplier** saves engineering time, reduces procurement expenses and minimizes contract risks. ABB engineers and consultants are fully trained to manage both the automation and electrification requirements of a power generation facility.

**Extensive integration** expertise shortens project execution times and ensures smooth integration of complex electrical systems.

**Reliable and high quality** electrical equipment maximizes the value of assets and guarantees highest plant availability.

**Effective project management**, combined with Health and Safety expertise minimizes execution risk and ensures client success.
Meet our global power generation service team

We have eight dedicated power generation service hubs, so that we can be close to our customers and understand the markets they operate in and the challenges they face. Each hub is supported by a network of global competence centers in power generation technologies. Please feel free to contact our service manager at your ABB regional hub. They and our entire ABB Power Generation team look forward to working closely with you.
Summary

Energy providers today, whether an independent power producer, an investor owned utility or a publicly owned utility, need a supplier that can deliver cutting edge services at all stages of the plant lifecycle.

ABB power generation services help customers run a lean organization, while maintaining a lifeline to the automation expertise they need, and is another reason why ABB is a leading service supplier to the power generation sector today. ABB is your strategic partner to improve productivity, availability, reliability, cost efficiency and energy efficiency.