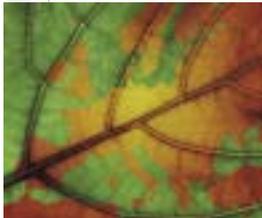


Serving the Chemical and Petrochemical Industries

ABB provides products, solutions and services that enhance the productivity and energy efficiency of a broad range of chemical processes, from the smallest batch plant to the largest continuous petrochemical complex.





Global

responsibility

ABB is a truly global organization with global resources. With a firm focus on health, safety, security and the environment, we strive to provide the chemical industry with technology and services that have a positive effect on the world we live in. With significant application knowledge developed over many years in this industry we can improve your productivity and reduce environmental impact.



Multiscope

risk management

ABB provides a wide portfolio of products and services for chemical processes either directly to the end user or via an engineering company. In many cases ABB is responsible for the integration of the composite solution to reduce client risks, project delivery time and to optimize the operational benefit of the installed system. Your risks can be further reduced by strategic partnerships or framework agreements.



Lifecycle

enhanced return on capital

ABB's services and products enhance your project from first concept to decommissioning. We operate locally while drawing support from ABB resources around the globe. A partnership with ABB provides world class expertise and continuity. As the project develops from one phase to the next, we're able to capture Lost Profit Opportunities (LPO) that would otherwise be missed.



Enabling Technologies

operational profitability

Our Industrial^{IT} enabling technologies provide fully integrated power, automation and safety solutions with open interconnectivity to business and expert systems. We offer a single system solution providing integrated batch and manufacturing management through to electronic records supporting all 5 IEC 61131 languages and all major fieldbus technologies.



A Pioneering Spirit

People and systems that support the complete manufacturing process



Safety, risk management, operational excellence and sustainability are important to our customers and to us. Whether you are a small speciality chemical company making a single product or a large multinational company with world class multistream processes the ABB portfolio of products and engineering expertise can reduce risk, cost and help you maintain a competitive edge.

ABB is a leading supplier of instrumentation, analytical devices, automation, electrical and safety systems to the chemical industry. From single products, supplied direct or via channel partners, to complete composite solutions demanding excellence in project management and deep process application knowledge, we can tailor the delivery scope to meet your requirements. In some cases you may choose to use ABB's consultative services to supplement your own staff, in other cases you may choose to have us act as the Main Automation / Electrical Vendor (MAV / MEV). ABB then takes on the total responsibility for establishing the base engineering detail and takes integration responsibility for the total system including purchase and integration of third-party devices.

In order to help chemical companies achieve a competitive edge, ABB now offers extended automation. This incorporates, in a fully redundant integrated platform, manufacturing management, batch management, process and electrical control, asset management and Overall Equipment Effectiveness (OEE) calculation to provide all your plant personnel with up-to-date information relative to their job role.

Combined with total lifecycle services and evolution policy our integrated solutions and consultant services improve your Return on Capital Employed (ROCE) – making ABB an ideal partner throughout the lifetime of your chemical plant installation.

Reducing your costs and risks

- Bi-directional integration with Intergraph's INTools™ reduces engineering costs by 25%

- Utilization of ABB as an MAV reduces CapEx costs by 20%

- ABB's Advanced Process Control reduces OpEx costs by 9%

- Main Electrical Vendor project schedules reduced by 2 months with significant reduction in CapEx costs

- Product turnaround time reduced by 25%

- ABB's Total Plant Reliability™ improvements return 3 to 1 on investment

Whether you need chemical process consultants, batch control, automation or electrical experts, ABB's global resources and centers of excellence are here to support you.



A Multiscope Lifecycle Supplier



As a leader in automation and power technologies with global engineering capability and a wide portfolio of products and services, ABB meets the special demands of the chemical industry. By involving ABB at the concept and FEED stages of a project, we can assist you in identifying best in class solutions that leverage the use of newer technologies and reusable components.

We recognize that the automation system is key to your company's long term viability and therefore support the use of framework agreements to cover a wide scope of product supply and associated services. These can cover multi-plant installations and form the basis for a corporate alliance agreement.

Throughout the lifecycle of your facilities, we are uniquely positioned to support your changing requirements giving you the flexibility to match our capabilities with your needs, from routine maintenance and remote monitoring to performance services.

We deliver multiscope projects with the objective of meeting your goal to reduce total installed cost and total cost of ownership. On multi-process unit plants with differing EPCs, ABB works with the end user to create a common Functional Design Specification (cFDS) for the supply of ABB and non-ABB scope to provide commonality, reduce risk and costs by reuse of proven solutions.

Multiscope Competence

From the small speciality chemical plants
to world scale production units

Our professional project management, global presence and strict compliance with international industry standards ensure timely, high quality deliveries throughout all project phases, from concept to operation – with a firm focus on health, safety, security and environment.

We execute projects around the globe, with local content and support to ensure knowledge transfer. The combination of global execution and local involvement improves productivity in even the most remote locations.

ABB contributes to lasting improvements across the project's lifecycle by bringing special expertise to the integrated engineering team, including multi-discipline experience and in-depth product and system integration knowledge. Powerful engineering tools allow us to receive data from all project parties to build an integrated application that gives operators, engineers, maintenance personnel and planners a role specific view into the entire installation.

With tremendous expertise in providing batch and manufacturing systems, ABB can provide you with consultative services through to the provision of a fully integrated production, campaign, batch and recipe management solution enabling you to be more competitive.

Our focus on system migration paths allows us to upgrade existing installations to state-of-the-art solutions without production stops. ABB has specific services and evolution products to allow upgrades and hot cut changeover of existing systems be they ABB or non-ABB.

ABB's analytical technology, advanced process control services, OEE calculation tools, along with root cause analysis and process benchmarking services generate corrective actions, to increase revenue and lower operational costs.

Once installed, ABB engineers will look to support you in process optimization, best use of assets, maintenance of the safety SIL rating plus routine servicing of the ABB and non-ABB equipment.



Risk management

Manage large projects effectively – we provide large-scale capabilities in terms of administration, engineering, documentation, testing and handling logistics of multi-discipline packages.

Use ABB's consultant and engineering services which have years of experience in process, batch and safety systems to reduce costs and maintain regulatory compliance.

Likewise, the use of Industrial IT enabled type tested products from ABB and third-parties, along with control libraries, reduces risk, eliminates potential project delays and improves operator visibility of assets.

Extensive lifecycle services complement our multiscope solutions to provide world-class asset integrity for the life of the plant.



Automation & Analytics



- Process control systems ■
- Safety systems ■
- Analyzers and process analytical technology ■
- Instrumentation ■
- Advanced control and optimization solutions ■
- Information management systems ■
- Batch and manufacturing management ■
- Production intelligence ■
- PLC / Compact control products ■
- Fieldbus and wireless technologies ■

Application examples

For this speciality chemical producer the automation system was known to be vital to their entire business. 800xA was evaluated and recognized to provide in a single platform, handling many facilities that would have traditionally been supplied by separate systems. Following this, ABB was selected not only to provide the automation system but also the instrumentation, analytical and electrical equipment for this plant and future expansions over the next 5 years.

ABB as the APC (Advanced Process Control) vendor provides world-wide a suite of latest technology products to optimize the performance and maximize the profitability of continuous process plants. For an ammonia stripping unit at a North American chemical plant, ABB's Predict & Control was used to control pH and NH₃ while minimizing utilities consumption and enforcing environmental limits on waste streams. This resulted in a reduction of the operating costs by 9%.

The latest in a series of modernization projects across five of this chemical company's sites, includes integrated process control and safety based on 800xA. The high integrity production of this Hydrogen Peroxide plant is assured using the AC800M High Integrity controller and safety rated I/O, while maintaining a consistent operations and engineering environment for the automation users. Integrated safety, plus the flexibility of 800xA supporting remote I/O, HART devices, PROFIBUS devices and integrated MCCs provided this plant with the implementation flexibility and integrity they needed.

When this major chemical company set out to build a grass roots Isocyanate plant, they looked for an analytical systems provider that could handle a project of this magnitude and reduce risk. Rather than dealing with the complexity of individual packages, or working through a consortium, they chose ABB to take on the single vendor responsibility and simplify the task. With 7 analyzer houses, and over 200 field systems, this was the largest single contract for analytical systems ever awarded by this producer.



A Full Range of Solutions For integrated automation



Working with our customers over the years, we have gained a thorough understanding of your requirements, which, combined with our expertise in new technology led us to develop Industrial IT. Today, Industrial IT System 800xA is the leading automation system in the chemical industry, going far beyond the features offered by other PLCs or DCSs.

The 800xA system includes manufacturing and batch management, Asset Management, and TUV certified Safety Instrumented System capabilities (SIS), MES reporting, full audit trail facilities to track operator actions and changes, and OEE calculation tools to support root cause analysis of production performance. The system supports all 5 IEC61131 programming languages, FOUNDATION Fieldbus, PROFIBUS and HART compliant field devices. Overall production reporting, product traceability and compliance reporting is achieved for the user by having integrated information management facilities that include full electronic batch reporting.

By the use of the ABB bi-directional interface to Intergraph's INTools package a reduction of 25% in the engineering cost can be realized as well as reducing translation errors and providing lifetime plant documentation.

In the role of Main Process Analytical Vendor (MPAV), ABB provides analytical solutions from design engineering and specification at FEED stage through to the supply of complete analytical systems including sampling systems, analyzers, housings and analysis software. Having the widest range of analyzers, ABB provides better visibility and quality control.

To enhance our automation offering we've developed a complete range of standard and industry specific batch, instrumentation and control libraries for plant device and equipment control providing superior operator visibility.

Advanced process control from process experts can be applied either as part of a new system installation or later once production has been established and constraints recognized in the existing assets.

Asset Information operational gains

Complete instrumentation, automation and electrical portfolio meeting the needs of the chemical industry – we manufacture, engineer and install safe, reliable and secure solutions.

Asset information that's effectively organized – 800xA technology acquires, analyzes and aggregates automation and asset information. Asset management solutions are built in, not added as an option.

Improved return – we offer management decision support, process benchmarking, process and instrumentation / automation expertise.

800xA provides flexibility for device management with a comprehensive library of field devices, supporting multiple fieldbuses with inherent device diagnostics.

800xA provides all the facilities chemical plant operational personnel could need in one system.



Electrification



- LV / MV / HV electric power systems
- Combined heat and power plants
- Electric power distribution systems
- Power management systems
- Electric control systems
- Electric motors
- Variable speed drives

Application examples

Looking to reduce risk and improve project implementation, this polymer producer selected ABB as their Main Electrical Vendor (MEV) for their new chlorine plant. The supply included electrical equipment—90MVA transformer, 132kV / 22kV switchgear, 50 MVA filter, 132kV switchgear, 6kV switchgear, an electrical protection and control system—and infrastructure work including cabling, installation, piping, mechanical and civil modifications. Taking on full responsibility for design, analysis, engineering, procurement, project management, installation and commissioning of the complete system, ABB was able to complete the project 2 months ahead of schedule.

For a major vitamin C supplier, ABB supplied the complete control system for their Combined Heat and Power plant that included both electrical power and steam load shedding. This allows the plant to manage their energy utilization effectively across the site, and avoid blackouts.

The customer wanted to reduce fuel consumption and pollution. ABB delivered a Power Management System (PMS) for optimized power generation and distribution. The supplied PMS power distribution system optimizes production based on available power capacity. To ensure environmentally friendly, state-of-the-art power management, ABB was involved from FEED phase to commissioning.



Single Source Supply Of total integrated electrical solutions

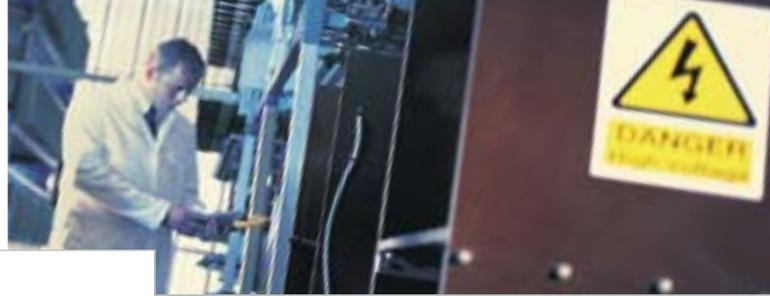


ABB is one of the largest manufacturers of electro-technical products and systems. Our high-efficient Low Voltage, Medium Voltage and High Voltage products meet the standards of the chemical industry.

ABB has been at the forefront in developing electro-technical solutions that comply with new requirements for energy efficiency, control and safety. Featuring high reliability and performance, our electrical products are suitable for the full range of chemical plant applications. By the use of IT industry standard communication techniques and the Industrial IT enabled type tested solution, ABB reduces risk, project implementation time and operational propagation delays thereby improving the time to market and production throughput.

Historically, electrical control systems, power management systems and load-shedding systems were handled separately. 800xA extended automation combines these three functions into a single integrated system with significant cost savings and operational benefits.

Customers who use ABB for their electrical scope requirements experience improved system performance and significant cost savings. ABB is the leading provider of power rectifiers to the chemical industry which are especially applicable to Chlor-Alkali processes. ABB is also recognized as the leading supplier of motors and drives.

For large project deliveries with a broad scope, and as a member of the integrated engineering team, ABB can adjust workflows, resources, tools usage and costs to accommodate the principal works schedule.

Increased quality, reduced power demand, improved electrical protection, integration efficiency and support for multiscope projects – ABB's involvement in your project means tighter project schedules and improved Return On Capital Employed (ROCE).

High Efficiency high rewards

Complete Integrated Electrical Project Solutions – we manufacture, engineer and install reliable, safe and secure solutions.

Proven, state-of-the art electrical building blocks – both operational reliability and open interconnectivity are provided for automation and integration with ABB and third-party devices.

Increased electrical efficiency – we enable cost savings and health, safety, security and environmental benefits.

Recognized benefits of a single engineered automation and electrical solution.

*Efficient electric power
and drives solutions lower
operating costs and
reduce emissions.*





- FEED support ■
- Conceptual project design ■
- Process and alarm philosophy ■
- Generation of the User Requirement Specification (URS) ■
- Safety assessment ■
- Process benchmarking ■
- Inspection services ■
- Integrity management ■
- Life of plant planning ■

Application examples

At a Sodium Hypochlorite storage and loading facility, ABB Engineering Services provided project management services for front-end engineering, detailed design, procurement and construction. The entire project, from conception through site selection to commissioning was successfully completed in less than 12 months, utilizing ABB's expertise in delivering fast track projects in an operating chemical plant environment.

A South American chemical producer wanted to compare their performance against world-class benchmarks. Turnaround management was deemed to be a major gap. After auditing their existing performance, and comparing against ABB's turnaround model of excellence, ABB was able to pinpoint twenty-three specific areas for improvement. With ABB's further assistance, this customer established a methodology for future turnarounds, implemented the main recommendations, and reduced their turnaround time by 25%.

At a major US specialty chemical facility, ABB's discovery team was brought in to evaluate existing plant performance. Working alongside the plant's process improvement team, and using Six Sigma principles, several improvement opportunities were identified that led to improved process yield, increased running times, and reduced plant variability.

ABB's Reliability Services performed an 18 month, multi-site improvement process, which focused on management leadership, lagging / leading success measures, risk based scheduling, operations and maintenance partnerships, root cause failure analysis, operations empowerment and preventive maintenance practices. By implementing ABB's recommendations, this company enjoyed annual savings of close to \$1 million in reliability costs and increased production of nearly \$3 million.



Lifecycle Excellence

From concept to plant optimization

Operational costs are lowered when ABB is involved from the start of the project. We are dedicated to finding solutions that satisfy your technical requirements, financial objectives and production goals. Your risks are reduced when you take advantage of ABB's experience and expertise across multiple disciplines.

From the start of a project our full range of technical, project management and design expertise comes into play. When combined with our operational knowledge of the industry this makes a big contribution in helping you to define the right scope for your needs.

Our process safety skills are valuable in either an operational or project environment. With services ranging from the installation of full instrumented safety systems to IEC 61508 / 11 to the leadership of hazard studies. Our process industry experience leads to fit for purpose, cost effective and pragmatic solutions that improve safety and meet regulatory requirements.

In operation the 800xA control system with its aspect / object technology allows the storage of a wide range of information such as specific operator guidance and maintenance instructions. Along with the inbuilt asset management software, linked computerized maintenance management systems allow accurate engineering information to be maintained on an ongoing basis.

We help chemical plant operators to comply with legislation and stakeholder expectations with regard to asset integrity. Our industry recognized expertise in integrity management provides an independent view of asset integrity and the supporting management systems and practices.

We guarantee efficient and effective hot cut changeover modifications in existing installations, having a specific engineering resource dedicated to hot changeover of ABB and non-ABB systems. Support for on-line changes and upgrades for multistream plants and those processes that never have a total plant shutdown are also catered for by the 800xA system.

CONCEPT » FEED » ENGINEERING » CONSTRUCTION » INSTALLATION » OPERATION » OPTIMIZATION

The single integrated solution for chemical plants



Productivity and Profitability

Through technology and services



Operational excellence is achieved when continuous improvement strategies are matched with real-time feedback and analysis tools to maximize production and reduce operational costs. ABB services, used throughout the operations phase, deliver operational excellence. Having probably the largest database of chemical processes, ABB can benchmark your plant against others to identify variance to Best in Class and advise you of potential improvements to increase production rate and reduce quality variability

Timely and reliable production information is vital in order to analyze and improve productivity. ABB's production information system offers an open architecture for data collection from ABB and third-party systems, and delivers customized reports.

In batch manufacturing plants you can take advantage of the inherent 800xA facilities that integrate manufacturing management, through recipe and plant equipment utilization to fully integrated Electronic Batch Records (EBR) – reducing your cost in meeting the requirements of environmental reporting and other regulatory body audits.

ABB Reliability Services provide solutions that improve safety, compliance and profitability. The World Class Reliability (WCR™) benchmark is a product of forty years of development. The benchmark process identifies best practices and compares an organization's performance level with other companies and industries. Qualitative and quantitative analyses are conducted of both reliability and maintenance practices, resulting in:

- Identification of performance gaps in the nine criteria of WCR
- Development of strategic and tactical plans to close the performance gaps
- Creation of a business case that documents the financial impact of addressing areas of opportunity

Following WCR, Total Plant Reliability is addressed through a multi-staged improvement program comprised of focused empowerment, asset management, maintenance prevention and balanced scorecard. TPR provides a path to permanent reliability improvement that can easily result in a 3 to 1 return on investment.

Operational profitability

Process knowledge and cross discipline competence give us the power to enhance your asset recovery.

Our multi-discipline, multiscope solutions increase production and product quality at a reduced operational cost.

Support services for ABB and third-party equipment.

System tools to identify loss production and root cause analysis.

Training including IT technology aspects such as security.

Processes and solutions to improve operations and reduce operational expenditures.



ABB has standardized processes, tools and matrices throughout our worldwide service network so you always receive consistent, high-quality service and parts – whenever and wherever needed.

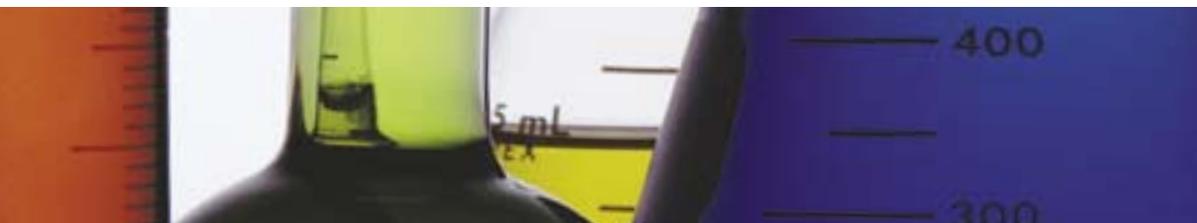
ABB offers specialized performance improvement services, such as Overall Equipment Effectiveness (OEE) analysis, that are designed to enhance process operations. To ensure optimal equipment effectiveness, our OEE analysis may be supplemented with an implementation plan and implementation services. Performance improvement services cover just one of many service areas offered.

On-site, ABB services range from installation support to full project management. Adding ABB support and remote services allows you to minimize operational costs and increase productivity and revenues.

ABB's local and global service organization tailors the scope of the post installation support to suit client needs from on-demand support, spares availability through to full healthcare contracts whereby ABB maintains the complete automation and electrical assets.

For aging chemical installations, ABB offers migration and retrofit analysis. Our professional migration strategies and implementation result in low-risk improvements to the OEE level. As a leading supplier to the chemical industry, ABB offers step-up programs and software maintenance programs that reduce downtime and maintenance costs, including hot cut changeover expertise.

Well-trained staff are able to increase both production and uptime. ABB offers a wide spectrum of training courses, including, product, operations, safety culture and safety assessment, held on site, at ABB facilities or electronically via our eLearning products.



ABB's future direction has always been influenced by the needs and challenges of our customers. Increased information flow and more stringent environmental requirements will certainly influence our future developments in the chemical sector.

The growth of data source devices will create new challenges in areas such as alarm systems and operator interfaces. A major challenge with data source devices will be to avoid “information overflow” while taking advantage of the information flow to increase the degree of automation, de-bottlenecking, optimization, remote control, remote support and diagnostics. ABB will continue to be the leading automation, electrical and analytical vendor and set the standards for integrated operations.

As the needs of the chemical industries evolve, ABB will meet these challenges with scalable products utilizing common building blocks and standardized software library solutions.

ABB employs hundreds of engineers and scientists in its corporate research laboratories and in addition has co-development activities with 50 universities.

As a leading technology provider ABB is actively involved in industry forums to contribute to and monitor trends in industry, markets and technology. This, along with direct input from our customers and consultants, shapes our development of new products and solutions for the chemical industry.



**For further information please contact
your local ABB office, or visit us at:**

www.abb.com/chemicals



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