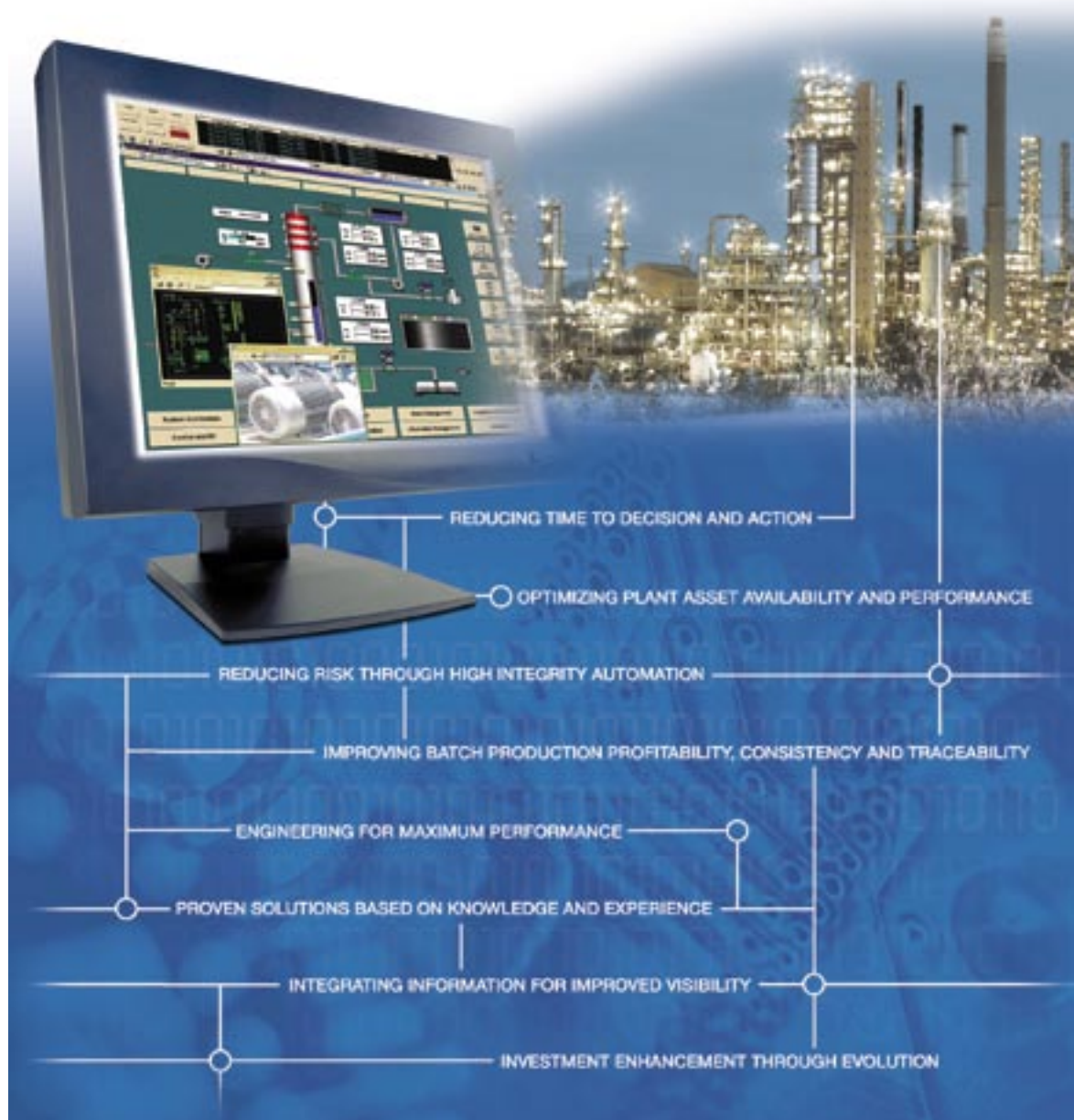


IndustrialIT Extended Automation System 800xA

High integrity automation solutions for continuous productivity improvements



IndustrialIT
▶▶enabled

ABB

Reaching new levels of **Industrial^{IT} Extended**

System 800xA delivers extended productivity gains by:

- Reducing the time to decision and action
- Engineering for maximum performance
- Reducing risk through high integrity automation
- Integrating information for improved visibility
- Improving batch production profitability, consistency, and traceability
- Optimizing plant asset availability and performance
- Delivering Control and I/O to meet entire automation and safety needs
- Extending installed system capabilities through seamless evolution



You're under more pressure than ever before to run your operation profitably – to achieve greater results with fewer resources. In the past, optimizing process control defined excellent performance. However, with changing market demands requiring faster turnarounds, greater customization, smaller lot sizes, and lower overall cost, production gains through process control improvements are not enough to guarantee success. In today's fast paced global economy, competitive advantages result when a company can tap into its assets' unused productivity safely and effectively to meet changing demands. With the Industrial IT Extended Automation System 800xA, ABB provides you with the technology and solutions needed to achieve a sustainable competitive advantage by enabling your plant to perform *smarter, safer, and better* at substantial cost savings.

Have **you** achieved **operational excellence**?

Operational excellence results when continuous improvement strategies, in conjunction with real-time feedback and analysis tools, maximize production or safety asset availability, optimize quality, and ensure predictable and appropriate plant performance. You face daily operational issues: How quickly do you react not only to process upsets, but changes in demand or product mix? Is the right information available to the right people in a usable format, or must they search several different systems to gather the data? Are you

overspending on preventive maintenance? Are you constantly reacting to equipment failures rather than proactively identifying poor performers? Does your end product consistently meet quality standards? At ABB, our tools provide more than a one-time improvement in performance, but continue to meet the challenges you're faced with on a daily basis. With System 800xA, the result is ongoing improvement in your overall productivity and profitability, ultimately leading you to operational excellence.

productivity with Automation System 800xA

Setting the gold standard of automation

Industrial IT System 800xA *extends* the reach of traditional automation systems — beyond control of the process — to achieve the productivity gains necessary to succeed in today's business markets. For the first time, this scope is accessible from a single user interface that is configured to present information and provide interaction in a context appropriate to all user disciplines. Extended Automation objects created within the engineering environment provide a foundation for the efficient development, deployment, reuse, and continuous improvement of production and safety applications with predictability unattainable from other automation solutions.

Protecting your investments

System 800xA is the latest installment on ABB's 20+ year commitment to our DCS users. Our pledge of *Evolution through Enhancement* ensures that future advances in systems technologies will enhance rather than

compromise your current investments. With System 800xA, you have the ability to extend the automation reach of your present system to enjoy new levels of productivity. The 800xA system provides the flexibility to implement the functions you require today and the agility to add others as needs evolve. Where others promote "rip and replace" migration strategies, we deliver true system evolution, allowing you to build on your strong DCS foundation.

Compounding value throughout the enterprise

System 800xA's unique operating environment allows you to incorporate 'best in class' products, applications and services from the world's largest automation supplier. Built on the Industrial IT Aspect Object™ technology platform and industry specific expertise, ABB's automation portfolio provides the seamless link between process, safety, and business management to deliver knowledge-based solutions.



Personalizing your view operation for

Knowledge is the most precious commodity in business today. Are your operators performing non-routine work processes consistently? Does your maintenance department know what equipment performance is degrading, and why? Do your engineers know what process loops are underperforming, and why? Do your managers know where production losses are occurring, and why? With data originating from a variety of devices and systems, the plant is teeming with information. The challenge, however, is having the information available in the proper context at the right time, in the right form, and to the right people.

Informed decisions through personalized workplaces

The growing deployment of peripheral applications related to productivity improvement vastly increases the amount of data available to improve productivity in the plant, utility, or mill. Yet, without the proper context, plant personnel can be exposed to information overload.

Unique to System 800xA is its ability to gather information from multiple plant sources and transform it into relevant information for a diverse set of users such as maintenance technicians, process engineers, production managers, or plant operators. For example, operators require an environment to allow them to run a plant in a safe way and produce products in required quantity and quality.

Operations managers require an environment to let them know what is the return on investment, risk, uptime, and production and maintenance costs at any given time. Engineers need an environment that will allow them to implement a specification change into their running plant in shortest time with lowest cost at the lowest risk. Maintenance and service personnel need information to ensure maximum availability of plants and applications.



Management

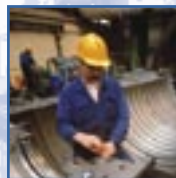
No other system interface provides the level of personalization to user job functions.



Engineering



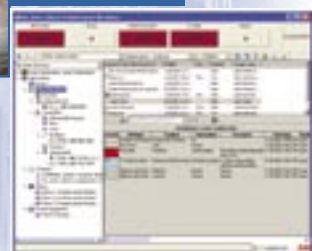
With System 800xA, all plant information is aggregated in one system interface with multiple views.



Maintenance



Operations



– integrate your increased productivity

Fully integrated system improves plant productivity

Removing the barriers of traditional distributed control systems, System 800xA supports the platform, application, and professional service needs of total plant management and control.

System 800xA dramatically improves plant-wide productivity through the following powerful, integrated core functions:

Operations

Process Portal, the industry's most intuitive system interface, provides a consistent method for accessing enterprise-wide data and for interacting with multiple applications from any connected workstation in the plant or office.

Engineering

Integrated engineering environment efficiently supports the complete lifecycle of the automation project, from planning, through configuration and library management, to commissioning and operation to minimize system ownership costs.

Safety

A complete, scalable IEC 61508 and IEC 61511 compliant SIS (Safety Instrumented System) that spans the entire safety loop, including SIL rated field devices, I/O modules, controllers, and field actuators.

Information Management

Powerful information management software collects, stores, retrieves and presents historical, process and business data to enhance the usefulness of data from all operations.

Production Management

Production management and optimization tools provide the agility, speed, and control needed to respond to increasing production



Extended functionality doesn't necessarily mean "large." System 800xA provides you the flexibility to start small by implementing the functions you require today, and the ability to add others as your needs dictate.

demands by modeling, executing, and tracking information associated with material and control flow across the plant.

Asset Optimization

Asset optimization software exploits the wealth of plant resident information to assess and report equipment conditions in real-time to reduce costly corrective and preventive maintenance and optimize maintenance and calibration work flows.

Control and I/O

Comprehensive suite of standards-based hardware and software meets the needs of total plant control. Controllers are complimented with a full line of industrial I/O interfaces to meet all plant environments.

Device Management

System 800xA integration of intelligent field devices via all fieldbus standards lowers lifecycle costs through significant cost savings in the design, implementation, and operation of field equipment.

Reducing time to

The 800xA Extended Automation System delivers the exact information – filtering out the noise – to facilitate consistent, sound business decisions and provides the environment to optimize the associated response.

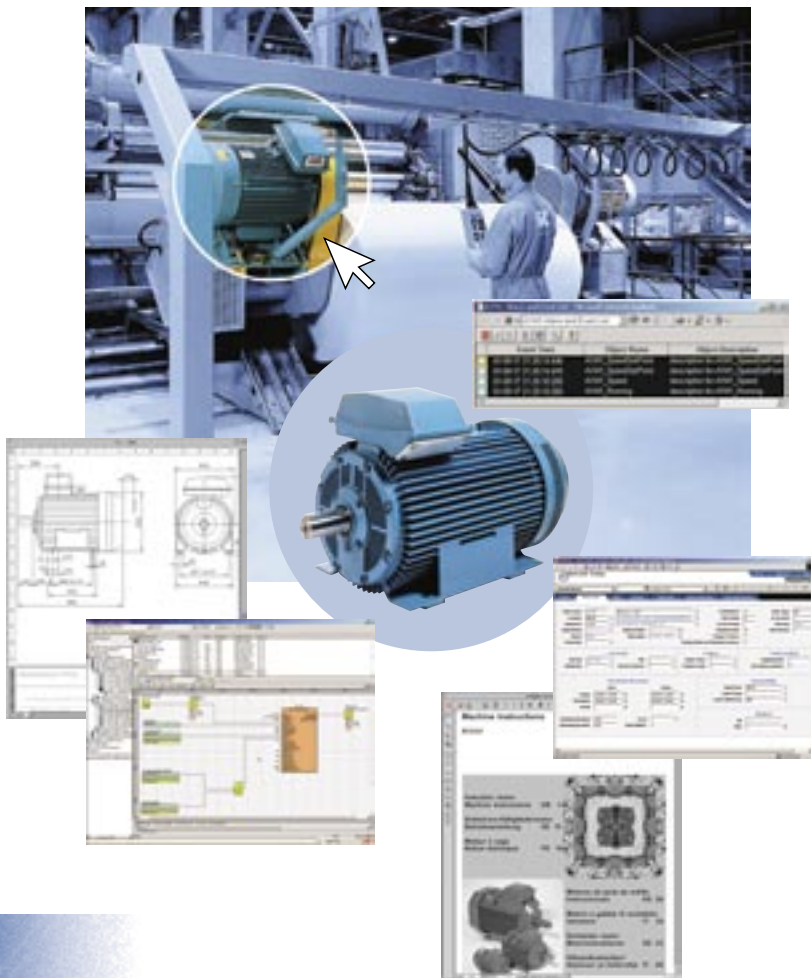
The enabling technology for this data access, storage, and management is ABB's patented Aspect Object framework. Aspect Objects relate all of your plant data, the Aspects, to specific plant assets, the Objects. The headache of locating information spread between different people, locations, computers, and applications is over. Contextual navigation presents the entire production facility in a consistent, easy to view fashion. This allows a single window environment to include smart field devices, asset optimization functions, information management, batch management, safety systems, and MES (Manufacturing Execution Systems) applications.



Process Portal enables streamlined routine work processes and optimal reaction to upset conditions.

In other systems, data is presented without user context. This means that every user must evaluate and understand the same sea of data, and then root out the decision criteria before taking action. With 800xA Process Portal, each user's login defines the type and class of information required for timely and informed decision-making. Thus, System 800xA delivers much more than an operator console; Process Portal provides an intelligent and focused presentation, enabling rapid response.

Optimal reaction requires real-time knowledge that an upset has occurred, or will occur. Process Portal provides notification through its audible and visual alarm and event presentation. Remote personnel are notified of critical events via mobile telephones, e-mail accounts, and pagers by 800xA's SMS (Short Messaging Service) and e-mail messaging service. Using GSM (Global System for Mobile communications) mobile phone technology, System 800xA allows remote acknowledgment of notification and confirmation of receipt.



decision and action



Comprehensive operator functionality for reliable control

System 800xA provides a complete set of operator functions that include realistic process graphics with standard faceplates, superior trending capabilities, intelligent alarm and event handling, production reporting and remote messaging. Complete functionality simplifies and streamlines operator interaction for more reliable control.



Integrated data for informed decision-making

Information from ABB applications, other automation systems or even business systems is readily integrated into the 800xA system on common displays. This single window provides users a much broader view of the facility and better information from which to make quicker, more informed decisions.



Intuitive and flexible context-sensitive navigation for fast information access

Quick access with familiar web browser tools to displays and information is provided. Favorite places, history lists, short cuts and hot buttons provide navigation through a process production facility quickly and accurately. Use of the right mouse button provides access to additional details such as photos, operator instructions and maintenance information.

Operations



Maintenance



Personalized workplaces for focused information access

Workplace layouts are adjusted and optimized to users' preferences and needs with individualized menus, toolbar contents and display locations. Windows management functions such as safe areas, pinning and stacking priorities minimize operation errors by prioritizing the presentation of important material.

Reducing risk through

Continuous pressures to reduce costs are balanced by your social responsibility to protect your people, property, environment, and the surrounding community from harm. System 800xA improves process availability while reducing risk to overall plant operation by providing a common high integrity system environment for production control, safety supervision, and production monitoring.

ABB safety expertise

With more than 25 years of experience in designing, implementing, and maintaining safety systems for oil and gas, petrochemicals, fine chemicals, and power generation applications, ABB is ready to support you in all phases of the IEC 61508 / 61511 safety lifecycle, from risk analysis and safety planning to system design and operations and maintenance.



Embedded safety and control

With safety and process applications executing within the same system environment, and even within the same controller, System 800xA offers safe, instant interaction between applications. This unique architecture eliminates the duality of system operations and their associated lifecycle costs and leads to optimized project engineering, training, operations, maintenance, and spare parts.

Meets industry standards

System 800xA safety systems are delivered and supported in accordance with the strictest standards. Among others, System 800xA complies with IEC 61508, IEC 61511, EN 954, NFPA 85 and NFPA 72 standards.

Secure firewalls

Although integrated within a common environment, System 800xA's extensive diagnostics and certified firewall mechanisms eliminate common-cause failures of control and safety circuits. Access management mechanisms embedded within the 800xA controller environment include: Access Control to applications, Confirm Operation, and Force Control. With these embedded firewalls in place, safety and process applications can freely exchange signals and data without the need for external, complex interface hardware, software and mirroring of data.



TÜV Product Service, the foremost independent certification agency in the business, has certified all product components of the 800xA Safety offering.



During process startup, maintenance, and testing, inhibiting of specific safety functions is performed through Process Portal standard operator dialogs.

high integrity automation

Flexible and scalable SIS design

System 800xA offers a complete SIS (Safety Instrumented System) solution, complying with the IEC 61508 and IEC 61511 standards and covering not only the “logic solver” but the entire safety loop, consisting of SIL rated field instruments, controllers and I/O modules, valve positioners, and actuators. Highly scalable, System 800xA SIS solutions provide you the flexibility to match specific safety functions with your actual plant needs.

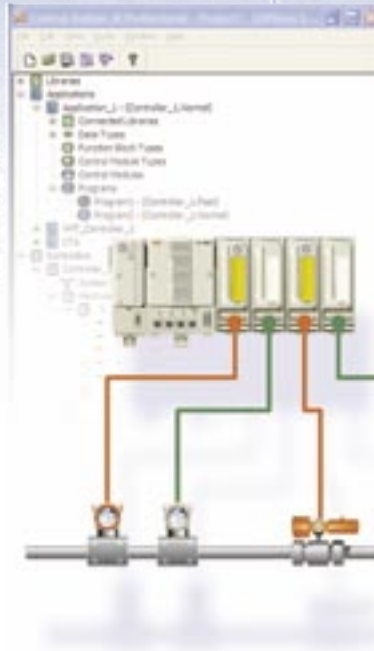
System 800xA high integrity controllers and I/O offer many interconnection options; making them suitable for all safety and critical process automation applications. SIL and non-SIL applications are secured by certified firewalls, with advanced diagnostics and built-in checks that prevent inadvertent degradation of safety applications.

Safety integrity monitoring

Using 800xA asset optimization and information management features, the need for off-line proof-testing is dramatically reduced. Actual events in daily operation are monitored, analyzed, and used in the functional verification and documentation of safety instrumented function integrity.

Total safety lifecycle management

System 800xA's object-oriented engineering environment with SIL compliant function libraries efficiently supports the entire safety system lifecycle from planning, through design and library management, to commissioning and support. System 800xA's engineering environment includes safeguards against non-SIL compliant configurations. Once identified as a safety application, the engineering system will automatically limit user configuration choices and will prevent download if SIL requirements are not met.



System 800xA high integrity controllers provide you the ability to combine safety loops with control applications; facilitating maximum utilization of process equipment within defined safety boundaries during changing production modes.

SIL compliant application solutions

System 800xA includes a comprehensive set of application specific libraries that contain pre-configured Control Modules, Function Blocks, and graphic elements. For safety, ABB provides a wide range of field-proven safety applications including Fire & Gas systems, Emergency and Process Shutdown (ESD and PSD), Interlock systems, Burner Management and Boiler Protection (BMS), Critical Control, High Integrity Pressure Protection Systems (HIPPS), and Pipeline Protection Systems (PPS).



800xA's Fire & Gas library includes a complete range of high-level Control Modules, Alarm Management, and operational templates and strategies.

Control and I/O for entire plant needs

Continuous productivity improvements and increased profitability are the driving forces behind the selection of today's automation systems. Traditionally, production facilities maintained many controller subsystems; each meeting specific plant needs. However, to succeed in today's changing business environment, you need a controller possessing multi-functional capabilities, adaptability to changing requirements, openness, availability, programmability and maintainability.

Installed base compatibility

System 800xA builds upon the leading brands and technologies that have made ABB *Number One* in automation systems installed base. This includes control and I/O compatibility for most installed systems from ABB, Bailey, Hartmann & Braun, Taylor, Fischer and Porter, and Alfa Laval Automation. The result: Maximum leverage from installed components as you evolve to new functionality!

Scalable, cost effective, fault tolerant design

800xA systems deliver powerful and versatile scalable solutions. Redundant controller, communications, I/O, and power options provide the highest level of availability in the industry. Equally effective for small hybrid systems and large, integrated safety and automation applications, System 800xA's scalable, cost effective design contributes to higher return on assets by improving production control and safety, maximizing process availability, and minimizing maintenance.



800xA supported controllers

AC 800M Series	Melody Series
AC 870P Series	Safeguard 400 Series
Advant Master Series	SATT & SattLine Series
Advant MOD 300 Series	Symphony DCI Series
Freelance Series	Symphony Harmony Series

With the largest installed base of traditional DCS in the world, ABB has designed the 800xA system to allow for implementation with its entire line of control and I/O products.

Diverse software functionality to meet all needs

Controllers feature an extensive software library of pre-defined and user-defined control and safety SIL compliant elements. These functions provide the power to easily design complex control or safety strategies to fit any application including continuous, sequential, batch, and advanced control.

Open architecture reduces lifecycle costs

Designed from the ground up to leverage the power of industry standard fieldbuses and open communication protocols, ABB's open architecture allows for the easy integration of a wide variety of devices and systems. System 800xA provides for total plant data integration while reducing overall system support costs.

Flexible I/O options

ABB I/O, available for local and remote mounting, provides a wide variety of input/output and signal conditioning capability, ranging from standard analog and digital to HART, FOUNDATION Fieldbus H1/HSE, and PROFIBUS PA/DP protocol devices. Intrinsically safe I/O, SIL rated I/O, and modular packaging options allow for System 800xA to be installed anywhere in the plant.

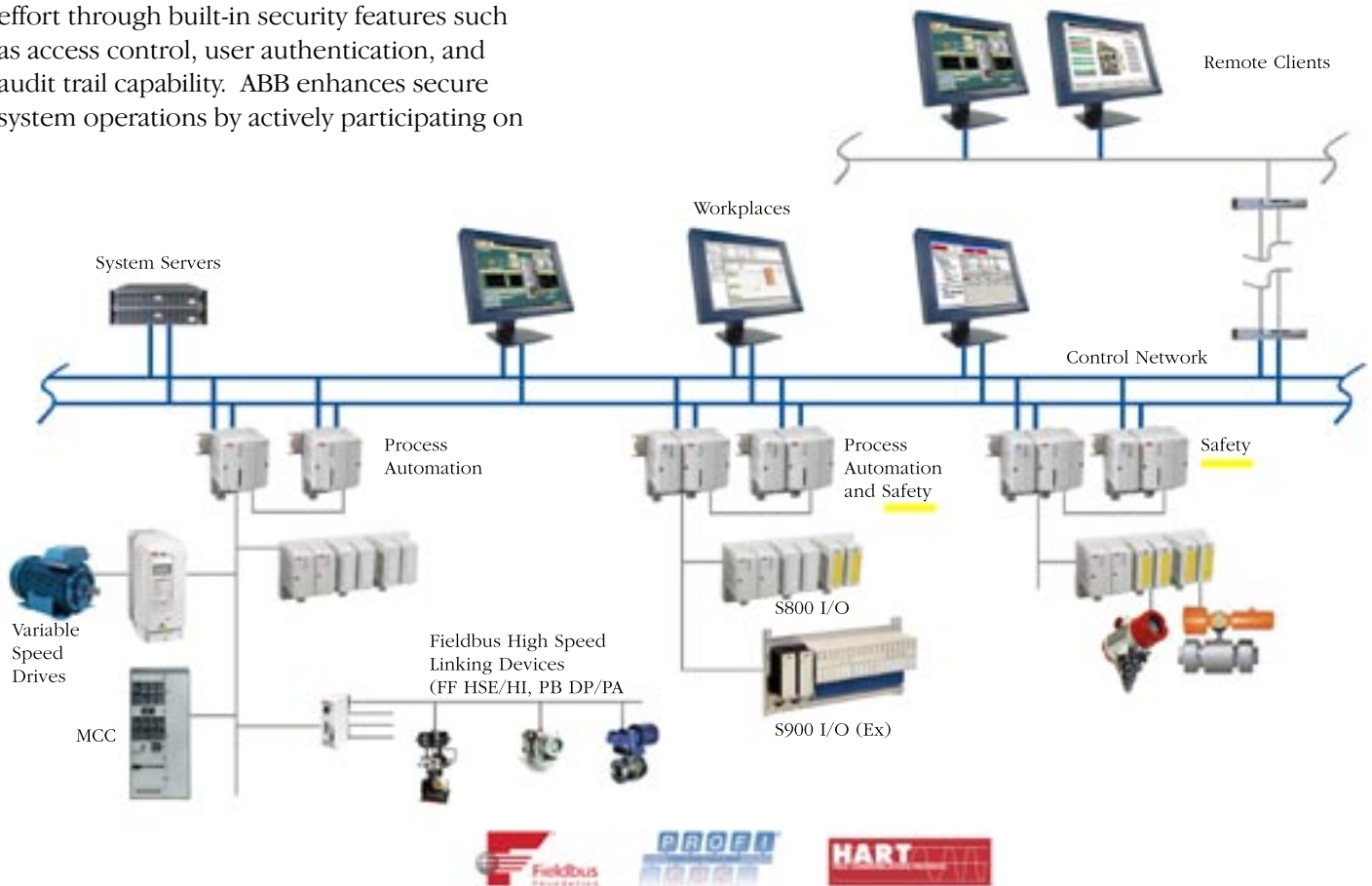
Maximum reach... minimum risk

Embracing the principles of open, real-time networking, System 800xA provides a scalable solution that spans and integrates loop, unit, area, plant, and interplant controls. From providing a secure foundation with robust, but flexible, base level regulatory and sequence control to higher level management and advanced control functions that include safety controls, production management, maintenance management, information management, and network management solutions, System 800xA meets the application needs of a wide variety of industries.

System 800xA provides you with a secure, reliable, control environment with minimum effort through built-in security features such as access control, user authentication, and audit trail capability. ABB enhances secure system operations by actively participating on

security standards committees, conducting threat-modeling studies, and incorporating “safe design” practices into product development.

Based upon the Aspect Object technology and a common set of hardware, System 800xA seamlessly integrates traditionally isolated DCS and Safety systems. SIS realization is achieved by either utilizing individual controllers or through dedicated applications within the **same** controller. With this embedded control and safety architecture, System 800xA reduces costs significantly; achieving the objectives of both systems...maximum plant availability at minimum risk!



Engineering for **maximum**



System 800xA helps you engineer for maximum performance with:

- *A fully integrated engineering environment for development and reuse of intellectual assets*
- *A single source of truth for all data within the automation system*
- *A comprehensive set of libraries to streamline the engineering workflow*

System 800xA provides a visual environment for easy design and deployment of automation strategies, process visualization displays, information management, asset optimization, and field device integration. The flexible, distributed engineering environment allows project data to be accessed, created and modified simultaneously by different users.

Total asset lifecycle engineering

Opportunities to drive operational performance improvement begin early in the project lifecycle where key asset information is being created in core process design systems. For example, by using System 800xA's process engineering tool integration for INtools[®], not only can automation system structure, functionality, and graphics be created directly from the INtools design, but operational changes such as ranges, units, and settings, can be continually reflected back to the INtools application. With this unique feature, engineering savings of 40% and operational savings of 20% are achievable from reduced as-built cycles and by automatically maintaining design synchronization.

Graphical function design

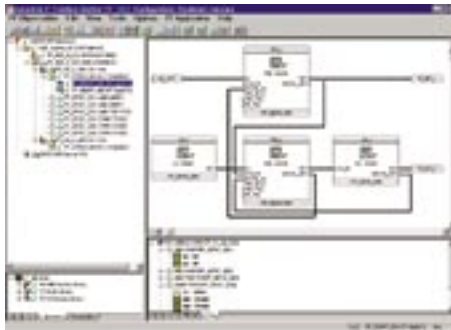
800xA Engineering graphical function design features enable your engineers to be "engineers" instead of "programmers." The graphical design of automation strategies facilitates easier engineering of your applications. Because design is function oriented, you can develop strategies without specifying controller and I/O physical allocations. Additionally, System 800xA's on-line monitoring and tuning features support you during commissioning and continuous improvement.

Process visualization

Interactive process operation graphics can easily be customized through the use of the comprehensive library of pre-defined elements and symbols. In addition, bitmaps, photos, and third party graphical elements can be supported.

Device management

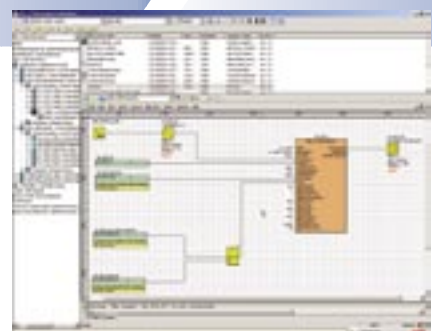
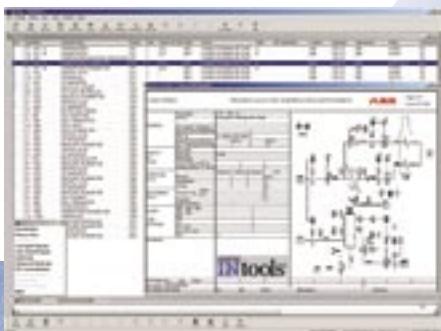
Device management for HART, FOUNDATION Fieldbus, and PROFIBUS intelligent devices provides the tools to engineer device integration from topology on down to the field elements, including device parameterization, application planning, commissioning, and detailed diagnostics.



Planning

Design

Configuration



performance

Bulk data management

The ability to efficiently manage large amounts of data is crucial to the engineering of any automation system. Using Microsoft Excel® and Excel add-ins, 800xA Engineering bulk data management features allow for the automatic importation and assignment of external data such as signal lists, tag names, or documents. In addition, you can export system data at any time to support data validation and modification.

Reusable solutions

Companies ensure maximum consistency, reliability, and availability of plant asset production by using “Best Practices” solutions. System 800xA allows standard solutions to be quickly reproduced and deployed.

Most focus their reuse solutions at the process control strategy and implementation levels. With System 800xA, your solution standards incorporate extended automation entities such as faceplates, graphic elements, trends, document links, CMMS data views, field device diagnostics, and asset monitors. Standards are defined at any level across the entire plant, loop, machine, line, unit, and area.

As needs change, your standards will change. System 800xA allows you to improve them. And with automatic update of all deployed instances, you can immediately improve the performance of your plant.

Change management

Needed to meet regulatory compliance, 800xA Engineering change management features record and track system configuration changes to project libraries, instantiated solutions, and runtime and off-line data. System 800xA audit trail and electronic signatures are key features that specifically fulfill FDA 21 CFR part 11 requirements.

Integrated documentation and diagnostics

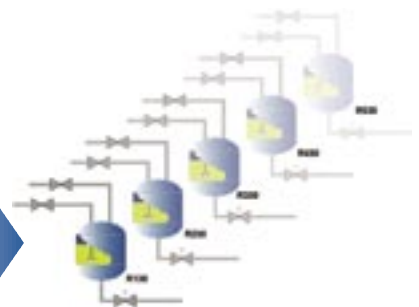
System 800xA’s integrated engineering environment provides the ability to associate documentation with related equipment and applications. Using dynamic documents, you can quickly navigate to the displays required for action. Documents based on Microsoft Excel, Word®, or AutoCAD® can be enhanced with live process values for easier diagnostics.



Installation

Commissioning

System
Enhancement
& Support



Reusable solutions



Integrating information for



Information is a key asset of all businesses

To achieve a sustainable competitive advantage, manufacturing and process businesses must be able to adapt quickly to change. Reduced time to decision and action is critical for improving quality and productivity. This makes the timely collection, manipulation and distribution of reliable information a significant issue. In today's business environment, electronic data needs to be presented as information to operations, engineering and management in the context most meaningful to them.

Information management functions are inherent to System 800xA. Historical, process and business data is collected from disparate sources and stored securely. The data is transformed into meaningful information, which is presented in a manner that is easy to understand. This provides important support at every level to improve efficiency and profitability.



From the control room to the plant floor, users have access to data in a flexible variety of formats that enable agile responses by key decision makers.

A screenshot of a data table with multiple columns and rows. The table is presented in a standard spreadsheet format, with a header row and several data rows. The text is small but legible.

Intuitive presentation

Desktop displays give managers concise, enterprise-wide information in familiar office formats without them having to leave their desks. A discrete tag ticker continuously showing key performance indicators (KPIs) can be supplemented with a trend display when more information is required. Operator displays provide information in the control system environment. These are able to seamlessly present both real-time and historic trend data as well as alarm and events.

improved visibility

Automated actions

Versatile scheduling options, which provide automatic triggers for key actions, support all plant personnel with both standard procedures and exception handling. Examples include support for root cause analysis with event triggered pre- and post- event logging, improving quality and asset availability by using calculations and event triggering to provide predictive alarms, as well as time scheduled reports.

Flexible report generation and distribution

A wide variety of reporting requirements are supported in familiar, simple to use formats. Not only can these fulfill plant and regulatory agency documentation requirements, but they also act as powerful tools for decision making and planning for improved performance.

Comprehensive production records

All batch recipe and execution data, inventory transactions, quality management actions, and manual operations of the manufacturing process are recorded. There is no need to aggregate multiple data sources to compile the complete production record. This makes it very easy to display and/or report any information from a specific batch, or from the entire campaign.

Sophisticated data transformation

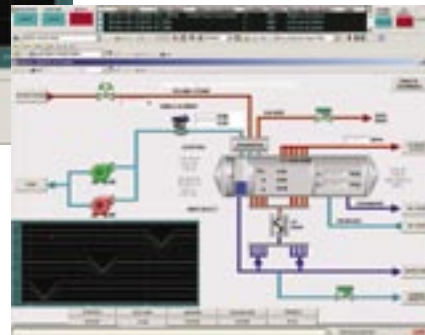
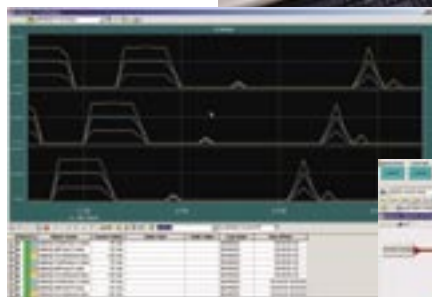
User defined data structures and calculations provide powerful, reusable algorithms and applications. These can be used to transform raw data into information, such as KPIs or material properties, as well as to offer sophisticated control support. The data structures can also be used to integrate external application data into the system.

Secure historical data storage and access

Fault tolerant and distributed data configurations provide dependable data availability. The information is also protected by user access restrictions and off-line storage. Users can be confident that electronic record keeping requirements are being met and that their decisions are based upon reliable information.

Integrated administration and configuration

The embedded historian uses the inherent system configuration and administration. This allows single point change management and eliminates the risk of inconsistencies between multiple databases and the need to duplicate engineering effort.



Optimizing plant availability

System 800xA's real-time PAM (Plant Asset Management) features significantly increase process uptime while reducing maintenance costs through early detection of asset performance problems and optimized remediation work processes.

Enabling predictive and proactive maintenance

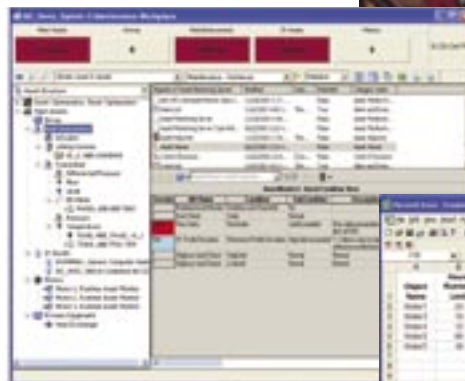
With 800xA Asset Optimization, plant resident information, such as that from field instruments, motors, drives, process and safety equipment, control systems, and IT assets, is collected, aggregated, analyzed, and compared to historical data to provide advanced notice of degrading performance and impending failure.

Condition monitoring

System 800xA's asset monitors use real-time plant information as inputs to detect health and performance conditions before failure occurs, assist in the diagnosis of the problem, and offer correction recommendations. These vary in complexity from simply identifying status changes in an intelligent device to identifying abnormal conditions using advanced process equipment condition monitoring applications. Pre-configured asset monitor types exist for assets of all levels ranging from HART, FOUNDATION Fieldbus, and PROFIBUS field devices to IT PC, network, and software.

Condition reporting and analysis

Continuous productivity improvement requires visualization of key plant information and asset performance metrics. Readily available plant information describes asset performance objectives, constraints, current behavior, and relationships with other plant assets. System 800xA uses this information to provide plant personnel with meaningful analysis and reporting tools that identify and analyze poor plant performers. Report screens provide immediate visualization of performance problems while analysis tools drill down to problem root causes, locations, and their impact on overall plant performance.



Asset	Status	Date	Value	Unit	Alarm	Location	Impact
Asset 1	OK	2010-01-01	100	%	None	Plant A	Low
Asset 2	Warning	2010-01-01	80	%	Warning	Plant A	Medium
Asset 3	Alarm	2010-01-01	50	%	Alarm	Plant A	High
Asset 4	OK	2010-01-01	100	%	None	Plant B	Low
Asset 5	Warning	2010-01-01	80	%	Warning	Plant B	Medium

Asset Optimization reporting displays provide quick identification of critical plant performance conditions while analysis displays drill down to problem root causes.

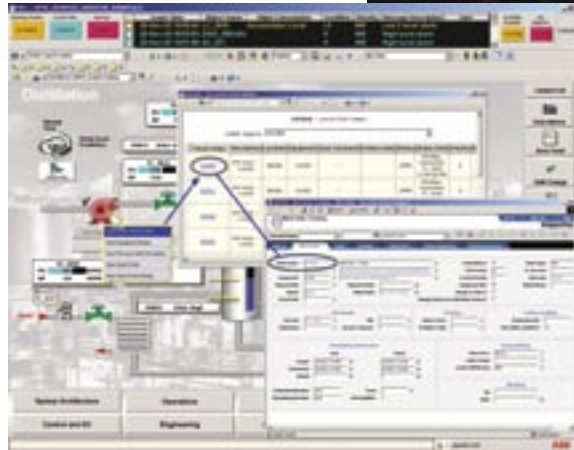
asset and performance

Reducing time to repair

System 800xA's integrated environment for device calibration and maintenance management provides you with a versatile plant lifecycle management and workflow optimization tool that will help you get the most value out of your existing plant assets.

Field device management

System 800xA provides a complete device management solution for your field devices. Meriam Process Technologies' DMS (Device Management System) extends the field device management tools by providing an integrated 21 CFR part 11 enabled calibration management solution for HART or conventional 4-20 mA devices. The DMS Software connectivity to System 800xA, in conjunction with Meriam's hand held MFC HART Communicator, and MFT HART Calibrator / Communicator, results in an integrated hardware / software solution that is unmatched in the industry.



CMMS resident information is readily available for viewing by right-clicking on the asset's graphic element. Hyperlinks provide direct connection to the specific work order located within the CMMS system.

Maintenance management

System 800xA maintenance management features make information within the CMMS (Computerized Maintenance Management System), for example MRO Maximo® and SAP PM®, transparently accessible to users in both the process control and maintenance system environments.

Seamless context-sensitive interaction is provided through standard System 800xA CMMS displays, such as active work orders, work order history, preventive maintenance schedules, and available spare parts.

When an equipment maintenance condition is detected, work orders are automatically submitted to the CMMS. Work orders required for calibration procedures are submitted to the CMMS, and then automatically populated in the DMS Action List, thus initiating the calibration activity. With these features, System 800xA optimizes the work process and significantly reduces the latent time between problem identification and resolution.



System 800xA can significantly reduce your device lifecycle management costs through precise calibration, configuration, and secure electronic documentation.

Unveiling your hidden plant with **real-time production intelligence**

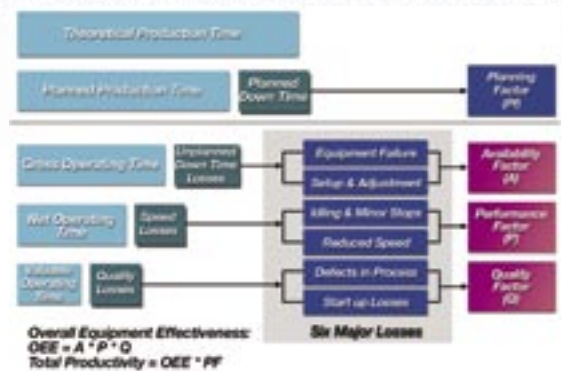
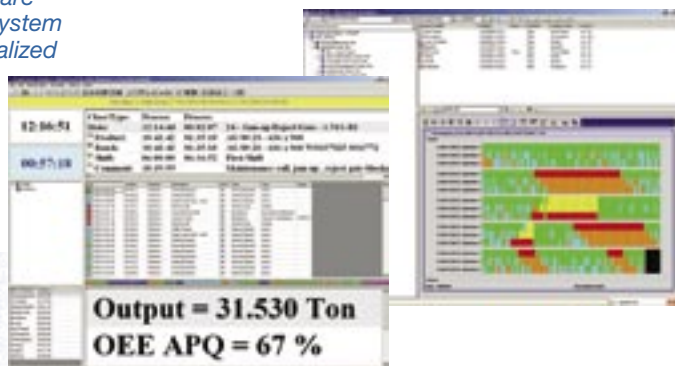
Plants can waste up to 40 percent of their process production capacity through equipment downtime, process bottlenecks, and quality issues. These undetected losses comprise a company's "hidden plant" productivity opportunities.

System 800xA's Real-Time Production Intelligence (Real-TPI) application software is designed to tap into these hidden productivity treasures by determining the true performance of the factory and identify ways to improve it. This established solution has delivered excellent results to manufacturers in a wide variety of industries. Real-TPI is now available as a functional extension of System 800xA.

Real-time performance measurement

Real-TPI is a specialized software application developed for plant engineers and production managers for use in determining the on-line OEE (Overall Equipment Effectiveness) of production equipment and processes. By automatically collecting machine data in real-time, Real-TPI is able to record, analyze, and present the individual machine and combined process availability, performance, and product quality factors that determine overall production efficiency. The resulting information is invaluable for removing process bottlenecks, thereby improving overall manufacturing throughput and product quality.

Reports such as Machine views and Chronograms are available via System 800xA personalized workplaces.



OEE is a key performance indicator of how machines, production lines, and processes are performing in terms of Availability, Production Rate, and Quality.

Data provided in asset context

Real-TPI stores all necessary context data for every event, allowing meaningful analysis and identification of the weakest link in the production line. Real-TPI calculates and updates the OEE values and other Key Performance Indicators on-line for the selected period and machines.

Analysis and reporting

Real-TPI software harnesses the analytical power of three industry standard production evaluation processes: OEE, RCA (Root Cause Analysis), and TPM (Total Productive Maintenance). When OEE indicates poor performance, RCA is utilized to determine what the problem is and where it is located so that corrective action can be taken. TPM is a process to adjust production equipment procedures with the goal of improving efficiency.

Real-TPI standard analysis and report displays include Chronograms, OEE Displays, Pareto Charts, Waterfall Diagrams, Penalty Charts, and Production Reports.

Improving **safety** and **productivity** through simulation

While control systems automate large sections of most plants, human error remains a critical contributor to most accidents. Safety risks, along with unplanned shutdowns and start-up times after outages, can be reduced with use of Industrial IT Training Simulator (ITS) solutions.

Lifecycle simulator

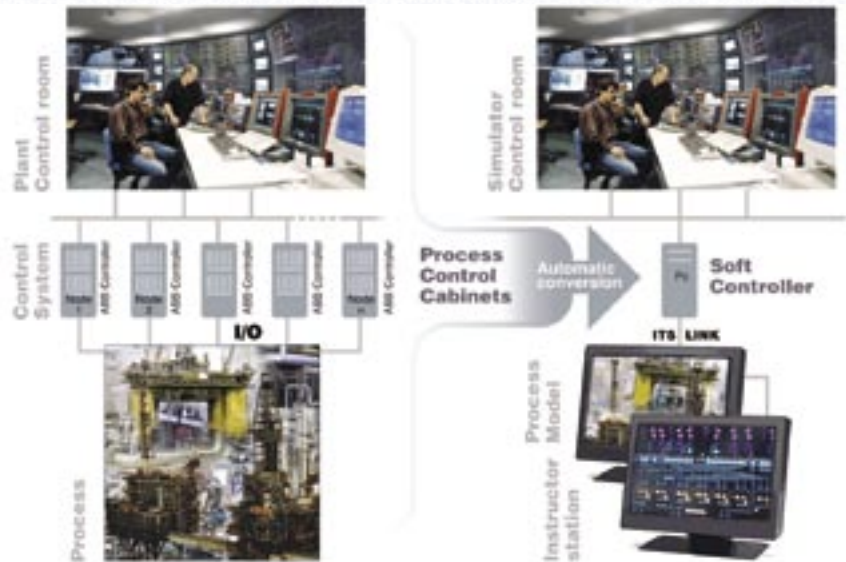
Industrial IT Training Simulators are an integral part of a cost-effective, comprehensive program for all phases of the plant lifecycle. By combining operator and maintenance training, control logic development, testing and validation, operator validation, and plant optimization studies into one system, you can maximize the value of your simulator system.

Leveraging intellectual investments

ABB simulation solutions build directly from your running plant system investments. By using the same operator displays, control logic, and execution environment as System 800xA, skills are 100% transferable. This also means that as the plant system evolves, so does the simulator; assuring longer simulator life and lower lifecycle costs.

Scalable process models

In a simulator system, a process model simulates the process I/O. With ABB simulator solutions, process models ranging from low-end models through control logic to high fidelity third party models can work closely with the simulator to provide the desired level of process response.



With System 800xA, it is possible to create a simulator system with the identical layout, view and logic of the running plant. Optionally, operator panels' physical I/O can be integrated within the simulator for identical control room interactions.

Runtime simulator functions

Operation of the simulator is performed via the instructor's station, where the instructor can initiate specific simulator functions including: freeze and resume of control execution, save and load process conditions, set process speed, and simulate process malfunctions.

Easy configuration and maintenance

Typically, only portions of the running plant are included in a simulator's scope. The Transformation Tool is used for defining the parts of the plant that will be simulated. Automated transfer of control definitions from plant controllers makes the simulator system easy to maintain. Re-transformation after plant modifications supports reuse of transfer configurations in earlier project phases.

Improving batch production consistency,

800xA Batch Management provides unsurpassed functionality in recipe management, batch and procedural control, safety, and security. It provides you the agility and control to respond to increasing production demands in real-time. By helping you to reduce lifecycle costs and production downtime, 800xA Batch Management enables you to achieve and sustain a competitive advantage in the marketplace.

Flexible recipe management

System 800xA employs a single, system-wide equipment model. Units, equipment modules, and all other resources are all configured within the same model. This makes adding or “cloning” a new process unit as simple as copy and paste. System 800xA is the only system that can use the new unit without having to modify existing recipes.

Unique on-line recipe editing capability provides unmatched flexibility during batch execution. Without stopping the batch, you

can modify parameters, sequence, and equipment assignments. All changes made to running control recipes are automatically saved in the batch production record.

Exception procedures

Anyone can run a batch to a pre-configured recipe under normal conditions. Only System 800xA provides exception procedures that extend beyond the procedure model of S88. These procedures provide the ability to configure error handling logic within the recipe, which greatly simplifies logic configuration for handling production specific abnormal conditions.

Resource management and scheduling

Flexible equipment management supports network, multi-path and single path equipment configurations. 800xA Batch Management reserves and allocates equipment and other resources at run-time based on batch priority.

Scheduling recipes is made easy based on master recipe procedures and formulation data specified by the BOM (Bill-of-Materials). You can either preselect equipment at schedule time or dynamically select it at run-time based on current status.

Regulatory compliance support

For manufacturing processes subject to licensing by regulatory bodies such as FDA, MHRA, and TGA, System 800xA provides the tools you need to achieve compliance. Security, audit trail, change management, electronic signature, automated reporting, archival and retrieval are integral to all operations and system applications. 800xA Batch Management enforces the production sequences necessary to consistently manufacture on-spec product.



ABB's standards-based production management capabilities are built to ISA S88, IEC 61512, IEC 6-1131-3, and ISA S95 standards.

profitability, and traceability

Combined with 800xA Batch and Information Management, 800xA Manufacturing Management modules (inventory, quality, operations, and weigh and dispense management) complete System 800xA's MES (Manufacturing Execution System) functions. The 800xA Production Management suite automates, monitors, controls, and documents cGMP (current Good Manufacturing Practices) compliance of your manufacturing processes. This enables you to achieve operational excellence in real-time manufacturing execution, quality, and performance management.

Inventory tracking

Manufacturing Management provides real-time tracking of materials throughout the warehouse, laboratories, and production areas, and includes lot maintenance and lot history (forward/backward tracking) displays. These are readily available from any personalized workplace. Inventory transactions (for example, move, consume, create, requisition, etc.) are completely integrated with execution of manual and/or automated procedures.

Release by exception

The quality management module of 800xA Manufacturing Management allows you to define sampling plans for materials. It also enables you to define "controls" or rules that govern material, equipment, and location usage. Due to the controlled execution of the batch and the enforcement of quality controls, only the "exceptions" that occur during manufacturing execution must be reviewed prior to final closure.

Integrated operations

Intelligent Forms provide operators information when performing manual steps within a procedure. Intelligent Forms also provide operator data entry of material IDs (barcode scan) as well as electronic signatures.



Complete electronic batch records

800xA Information Management saves all manufacturing execution data in a single Production Data Log (PDL). This is only possible because all MES functions have been seamlessly integrated into the common architecture of System 800xA. You no longer have to gather data from multiple disparate sources to assemble the complete EBR (Electronic Batch Record). The Production Management suite of System 800xA does it for you automatically!

Field-proven **solutions**



Complementing System 800xA and over 100 years of automation expertise are software, application, and service professionals worldwide that are focused on delivering productivity and profits to you. Our industry-focused experts provide solutions for customers in Chemical and Petrochemical, Life Sciences, Pulp and Paper, Manufacturing, Utilities, and other industries. Through our dedicated teams, ABB is committed to providing you with solutions that will improve your productivity.

From advanced control and process optimization applications to dynamic simulation and training, ABB delivers a foundation for advanced control techniques in real-time. Backed by industry specific experience and know-how, System 800xA advanced control applications ensure that your facility will operate more efficiently, profitably, and competitively.

ABB's application engineers have the expertise to solve every possible automation problem. Working side-by-side with control room operators, they have implemented advanced process control and optimization using applications and products from around the world.

Their practical experience is backed by ABB's research into control theory, information technology, mathematics and statistics. ABB delivers world-class technology from our own R&D and from our software partners, using best-in-class tools to improve an integrated application package, for a small-scale single-unit or a large-scale multi-unit facility.



Project Execution services

ABB Project Execution services support all phases of a complete turnkey, full service system installation project, providing you with a single point of responsibility throughout the project's lifecycle. From project definition, through system design and engineering/manufacturing, to installation/construction, and commissioning/start-up, our experienced teams of project managers, technicians, engineers, and on-site service personnel will execute your project to successful completion.

Total lifecycle support

ABB provides a full range of complete lifecycle services for our products and systems. From spare parts and equipment repair, remote services and training, maintenance, and evolution support to complete asset management, ABB's application and process knowledge provides proficiency that translates into measurable production performance improvement.

ABB Performance Services

ABB Performance Services offer a wide range of value-enhancing services dedicated to accelerating return on investment by reducing cost and increasing asset effectiveness. From short-term consulting engagements to long-term value based outsourcing, ABB Performance Services are committed to client partner success.

Automation Performance Management

Automation Performance Management is an evolution of ABB Performance Services. Through established best practices regarding plant floor assets and performance criteria, ABB has evolved its automation approach by converting traditional capital expense into a usage and performance-based service agreement.

On-site services

ABB's service team is positioned globally, with thousands of service personnel ready to provide a fast and efficient response to every service request. ABB is trained and certified in advanced repair and diagnostic techniques to minimize downtime and have equipment back on-line quickly. Global strength and experience allows ABB to develop and leverage best practices in process and system optimization to improve the performance of your ABB products and minimize associated cost.

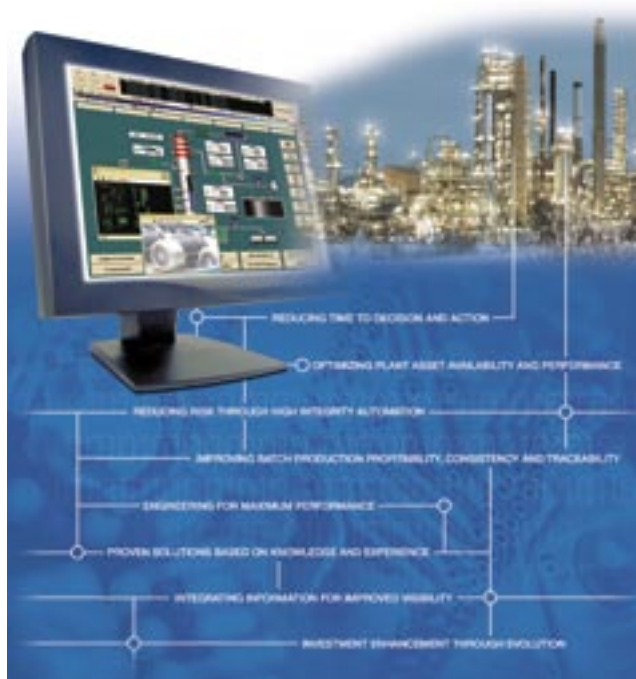
SoftCare services

The SoftCare software management program continuously provides you with immediate access to the latest productivity enabling software. In keeping your software current, SoftCare positions you for the constantly changing industry and IT standards by providing constant enhancements, better integration, and more efficient support.

Evolution and enhancements

New generations of software and system components provide increased operating efficiency, lower cost and extended system life. ABB offers low-risk evolution and upgrade strategies for a broad range of products and systems to assure maximum return on investment while enhancing equipment availability and performance. Our customized evolution planning, implementation and follow-up ensure long-term benefits and continued asset effectiveness.





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visit us on the World Wide Web at
<http://www.abb.com>**



Automation Technologies
Västerås, Sweden
Phone: +46 (0) 21 34 20 00
Fax: +46 (0) 21 13 78 45
www.abb.com/controlsystems
e-mail: processautomation@se.abb.com

Automation Technologies
Wickliffe, Ohio, USA
Phone: +1 440 585 8500
Fax: +1 440 585 8756
www.abb.com/controlsystems
email: industrialitsolutions@us.abb.com

Automation Technologies
Mannheim, Germany
Phone: +49 (0)1805 26 67 76
Fax: +49 (0) 1805 77 63 29
www.abb.de/controlsystems
email: marketing.control-products@de.abb.com

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