Symphony Plus
S+ Operations

Power and productivity
for a better world™

ABB

S+ Operations
Driving effective operations

Operator effectiveness is fundamental to a plant's performance. However, with fewer plant operators, a generational shift in the operator workforce, and increasing complexity of plant operations, it is becoming ever more challenging. Symphony™ Plus, with its intuitive, easy-to-use human machine interface (HMI), leads operators to greater awareness, faster response and better decisions.

S+ Operations is designed for high performance in every aspect involved: human machine interface, integrated operations, seamless life cycle management, information management, alarm management, security, process optimization, and with flexible, scalable fault-tolerant design.

Flexible, scalable, fault-tolerant design
S+ Operations' unique system architecture is easily adapted to any size and type of plant

Designed for high performance
Distraction-free process information, intuitive navigation and customized workplace for each role

Integrated operations
Seamlessly integrate all plant devices and sub-systems by using industry standard protocols and technologies

Information management
Transform data into meaningful information and present it in intuitive user-specific desktop displays for real-time business decisions

Alarm management
Superior integrated alarm management system includes the industry's leading EEMUA 191 compliant alarm analysis system

Security
Built-in security features for safe and reliable operations environment online and offline

Process optimization
Combined with OPTIMAX optimization applications, S+ Operations improves overall plant productivity

Seamless life cycle management
Seamless and incremental integration of new products, technology and functionality without the time and expense of re-engineering and re-training
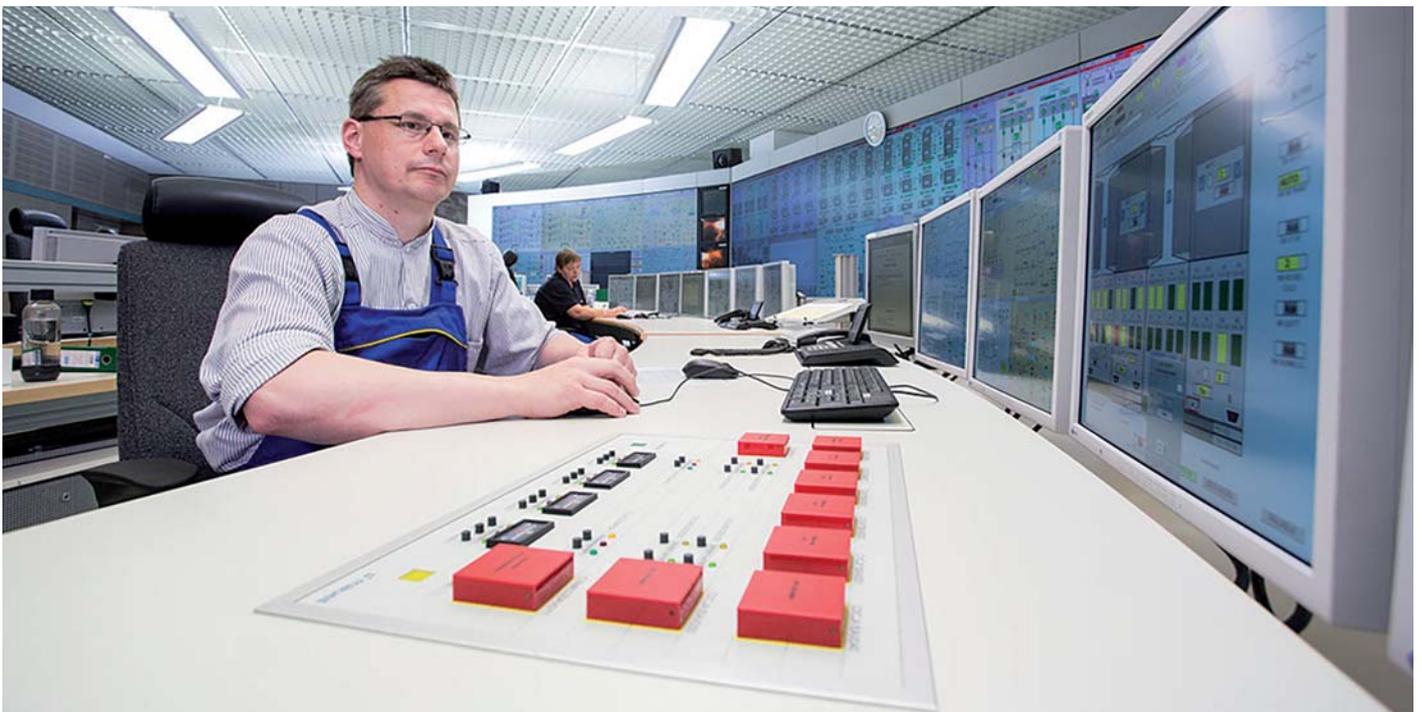
S+ Operations
Improving operator effectiveness

Designed for high performance

S+ Operations provides operators with detailed well-arranged process overview displays. Direct access navigation leads to information-rich control faceplates, superior trending capabilities in accordance with VDI/VDE 3699 Part 4, EEMUA 191-based alarms, and various reports.

State-of-the-art-graphics with intuitive control faceplates provide for well-arranged and detailed displays of any control point in the plant. Favorite places, history lists, short cuts and hot buttons facilitate quick and easy navigation through the power or water facility. Workplace layouts are adjusted and optimized according to the user's needs and preferences. These workplaces are optimized to individual preference and access rights based on user log-in. Windows management functions, such as safe areas, pinning and stacking, prioritize the presentation of important material.

Direct and seamless cross-navigation between operation displays and engineering documentation provides users with the ability to easily troubleshoot any control loop or process area.

S+ Operations' reports are easily adaptable to the specific requirements of a plant, including customized reports using Microsoft Excel.

S+ Operations gives even the most complex installation and process the operational simplicity needed for the efficient administration of the plant. This is the way that every modern industrial process deserves to be controlled – with such speed, simplicity and proficiency to defy the multi-layered complexity of the events taking place and the equipment controlling them. There is no better way to boost operational excellence.

S+ Operations provides operators with distraction-free state-of-the-art process information and access
– State-of-the-art graphics
– Intuitive, information-rich control faceplates
– Operational simplicity
– Distraction-free display
– Personalized workplaces
– Strong reporting functionality
– Easy configuration
– Superior trending capabilities according to VDI/VDE 3699 Part 4
– EEMUA 191 and ISA SP 18.2 alarm and events

S+ Operations
# Robust and flexible system architecture

Enterprise Layer

S+ Operations allows monitoring and control of entire fleet of plants from a single location. Reports and KPIs required for fleet wide business decisions can be generated from the corporate location.

Segregated Architecture

For medium to large applications where independent servers are required for plant areas. Each server only acquires and maintains data from related plant area but the clients can share graphical pages and tags from other servers.
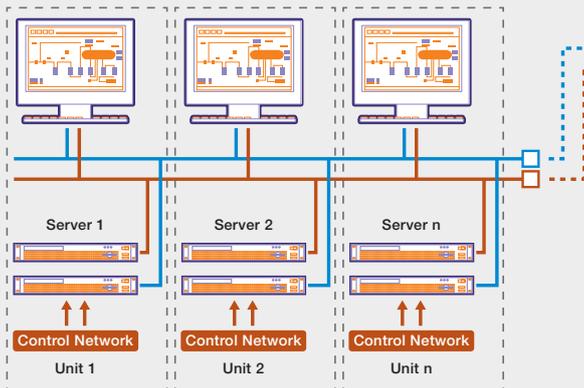
Composite Architecture

For medium to large applications where servers are required to maintain a complete database. Each server acquires data from related plant via controllers and other area servers through the PN800. Clients can see all tags from all areas of the plant.
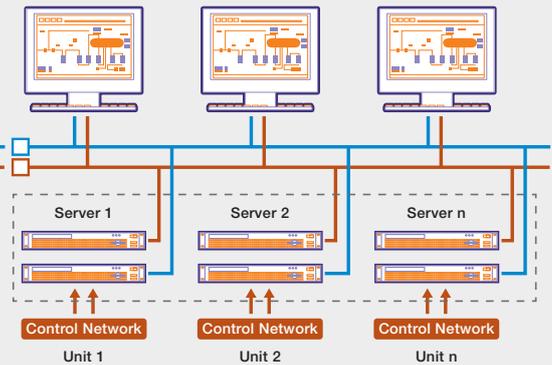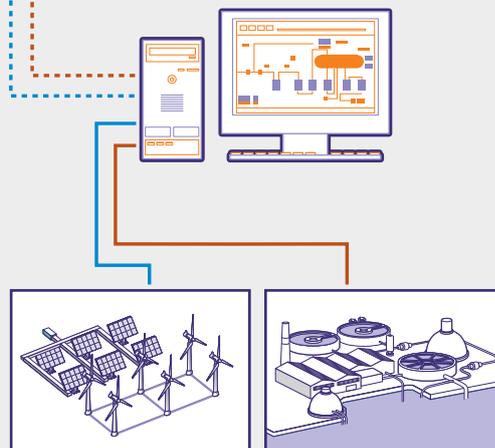

Standalone Architecture

For small independent processes that do not need multiple nodes.
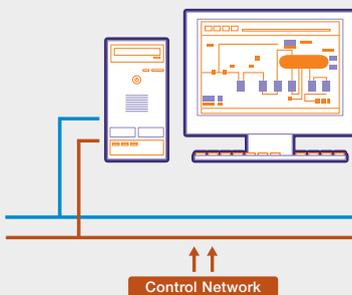
S+ Operations for SCADA applications

Scalability from very small to very large and from local to wide area networks. Interface to RTU, PLC and IED based protection systems. Seamless integration of your renewable plants into your portfolio.

S+ Operations
Simplifying control with seamless integration

S+ Operations provides a broad view of the plant by integrating data from all plant areas and systems, including turbine control, electrical balance-of-plant as well as remote SCADA systems. By providing a comprehensive view of the plant, it enables the operators to see a complete picture of the plant which ultimately results in increased plant safety and efficiency.

S+ Operations perfectly integrates with Symphony Plus control system as well as other ABB control platforms. Through its open architecture, it flawlessly integrates industry standard 3rd party interfaces. In each case, the resident information is made available to the controllers for use in control strategies leading to tighter, more reliable process control.

GIS
To meet the needs of distributed automation and improve the performance of wide area applications like PV solar plants, hydropower stations, wind farms and water distribution networks, S+ Operations offers an integrated Geographical Information System (GIS).

With pre-configured GIS layers, this built-in feature allows users to pan and zoom over the map of entire network without leaving the operations environment.

The DCS objects such as tags, alarms, faceplates, graphics etc. are mapped to one or more GIS objects. This allows one-click navigation between GIS and DCS screens. Thus, by zooming in on a specific module or unit of the process, the users can readily get real-time as well as historical information on that particular asset.

To comply with the stringent security requirements of a control room, S+ Operations' GIS is capable of full functionality in offline mode (without requiring an internet connection). This solution is fully compatible with maps from major vendors like Google and Bing as well as users' own background maps. It does not require a 3rd party GIS nor is it tied to a specific maps vendor. This flexibility makes S+ Operations' GIS an ideal choice for small and large applications.
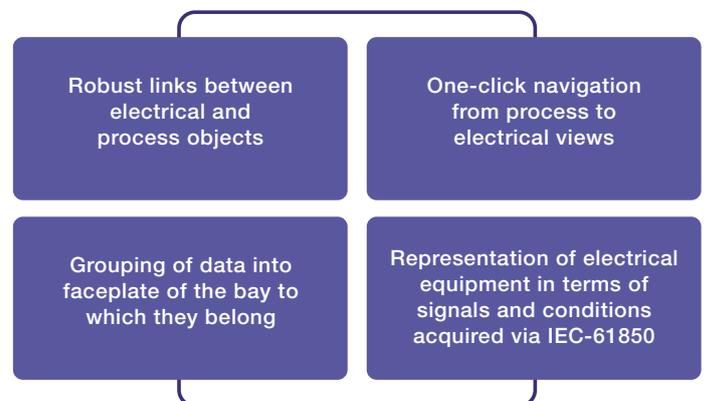
Electrical integration via IEC-61850
A large step forward in terms of simplifying the integration of electrical systems has been taken with the introduction of the IEC-61850 standard.
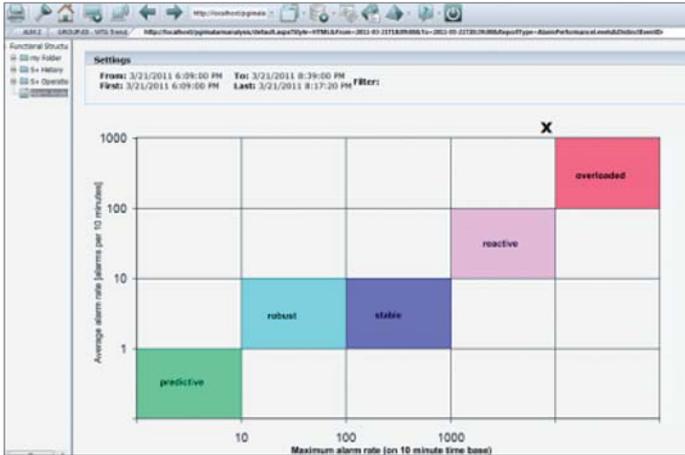
Electrical system integration into the plant DCS allows industrial and utility processes to be run at a higher level of availability and energy efficiency. It provides a substantial reduction in plants' operational costs and overall safety and reliability.

S+ Operations provides native MMS communication with IEC-61850 IEDs in order to acquire and display three-phase current, voltage and all protection values. This native communication is an easy and fast solution which reduces the cost of implementing electrical integration.

Moreover, S+ Operations allows full control of the electrical structures, modelling the most relevant power system applications including transformer bays, generator, incoming, measuring, outgoing, busbar, VFDs and motor bay.

Robust links between electrical and process objects	One-click navigation from process to electrical views
Grouping of data into faceplate of the bay to which they belong	Representation of electrical equipment in terms of signals and conditions acquired via IEC-61850

S+ Operations
Simplify Alarm management

1 EEMUA 191 and ISA SP 18.2-based alarm analysis
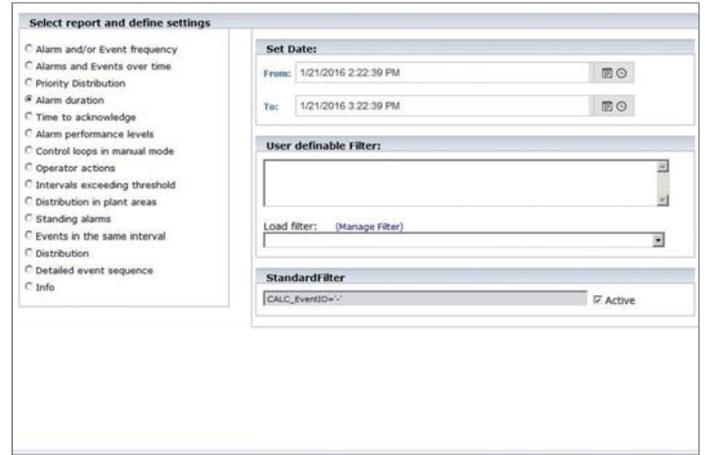
2 Built-in tools for statistical alarm analysis

Alarm management

A high-quality alarm system is an essential tool for operators to run a plant safely and efficiently. But in many plants, modern devices and systems generate all types of alarms too easily, which unfortunately leads to a flood of alarms and overwhelms the operators' cognitive capabilities.

Alarm rates that are constantly too high distract operators, decrease vigilance, lower awareness and overload the operator's short-term memory.

S+ Operations' advanced alarm management system provides all the necessary instruments for efficient and stringent alarm management. The EEMUA 191 and ISA SP 18.2-compliant alarm analysis tools help users to categorize occurring alarms, while the integrated alarm management system keeps operators focused and undistracted, allowing them to act with confidence. Clear and instantly available alarm-related information extends the possibilities to respond swiftly and correctly, which helps avoid costly downtime.

S+ Operations improves the operators' capability to detect and respond to abnormal situations. For example, S+ Operations supports the implementation of high-performance alarm management strategies with features such as alarm grouping, filtering, inhibiting, shelving, and suppressing.

S+ Operations' alarm management functions lead to alarm statistical analysis and advanced alarm reports. System management of alarms includes priorities and groups, in which groups are organized and viewed in hierarchical structures. S+ Operations supports remote alarming through standardized server and client communication.
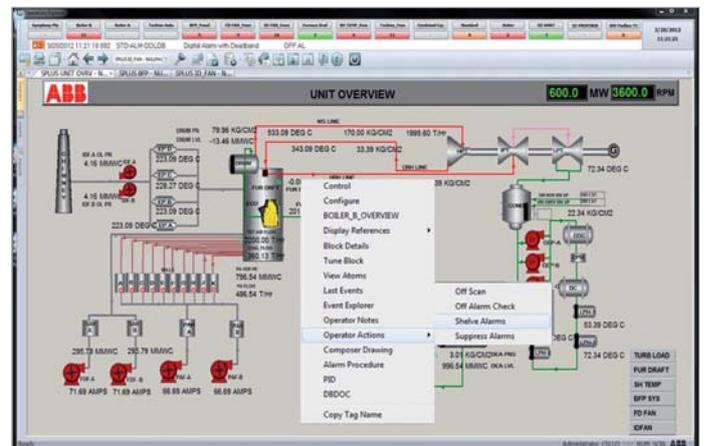
3 Right-click alarm actions
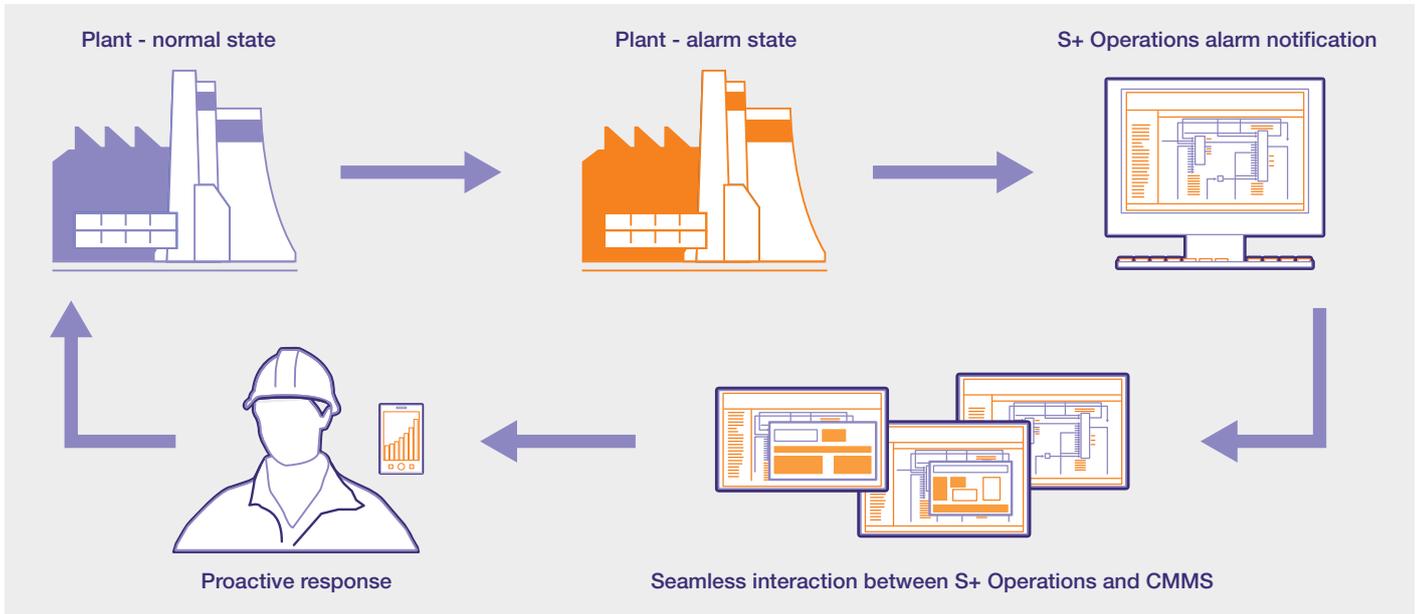
S+ Operations' superior integrated alarm management system includes the industry's leading EEMUA 191 and ISA SP 18.2-compliant alarm management and alarm analysis system
– Advanced alarm management analysis
– EEMUA 191 and ISA SP 18.2-compliant alarm analysis
– Alarm grouping, filtering, inhibiting, shelving, and suppressing
– Alarm statistical analysis and reports
– Remote alarming

S+ Operations
Electronic Shift book with CMMS interface

Plant - normal state   Plant - alarm state   S+ Operations alarm notification

Proactive response   Seamless interaction between S+ Operations and CMMS

Quite often the maintenance engineers rely on hand-written information by the operator from the past shifts or past days. This is time consuming and prone to error. Analyzing this information to see trends or patterns and making decisions is very difficult. This resulted in missed opportunities for optimizing operations, streamlining workflows or recognizing and correcting safety measures.

S+ Operations includes a built-in electronic Shift Book which can replace the paper shift log that exists in most plants.

With the electronic Shift Book, the operators are able to create manual entries into this shift book and attach additional information such as alarm data, trend data and other related documentation. Each manual entry can be assigned an attribute which can be used to evaluate the shift messages statistically. From each entry in the shift book, a signal list can be generated which can help in fault analysis.

The electronic Shift Book also allows automatic shift book entries initiated by process signals. Each tag can be assigned certain rules which will generate an entry when the logical conditions are met. Every logical situation related to a tag can be supplemented with a specific message text and snapshot.

Some of the other features of the Electronic Shift Book include the automatic post-trip log, statistical reporting based on MS Excel, email distribution of reports, to-do lists and automatic shift hand-over reports. As a security measure, after the shift hand-over is completed, operators are not able to edit or manipulate the original entries. Commenting and changing the pending status are permitted.

Using the CMMS Interface capability of S+ Operations, all the relevant shift book entries can automatically be transferred to the plant CMMS and generate a maintenance message for the crew. The core function of the CMMS interface is to map maintenance objects to DCS objects. Users can allocate control signals to maintenance components within the CMMS. Maintenance objects can be either locations (e.g. pump at point LAB10AP001) or components (e.g. KSB sectional pump HGM). The maintenance objects are exported from the CMMS as a list and then imported into S+ Operations via the CMMS interface where they are matched with the system tags by simple drag & drop operation. The benefit of this function is that by right mouse click context menu the relevant CMMS object can be reached and information about the specific component can we presented to the operation personal.

This avoids duplication of efforts and also minimizes chances of erroneous manual entries when it comes to transferring information from DCS to CMMS.

The CMMS interface enables:
- Creating and transferring totalizers or counters for operating hours, switching cycles and volumetric meters to maintenance applications (e.g. using SQL commands, XML-file exchange, SAP-API)
- Forming and logically combining maintenance-triggering signals independent of the process control system
- Generating automatic or manual maintenance messages within the control center environment and transferring them to the CMMS
- Providing a configuration tool for mapping the control signals (tags) with the CMMS maintenance components

S+ Operations
Turning data into useful information

Information management

Reduced time to decision and action is critical to improving quality and productivity. This has not been more urgent than now in the changing industrial landscape. Timely collection, transformation and distribution of actionable information into the hands of the right personnel can provide sustainable competitive advantage.

All users, including operators, engineers, maintenance personnel, supervisors and business managers have unique requirements and viewing preferences for plant related information. S+ Operations' fully integrated information management capability provides reliable and actionable information at every organizational level to improve operational efficiency and overall profitability.
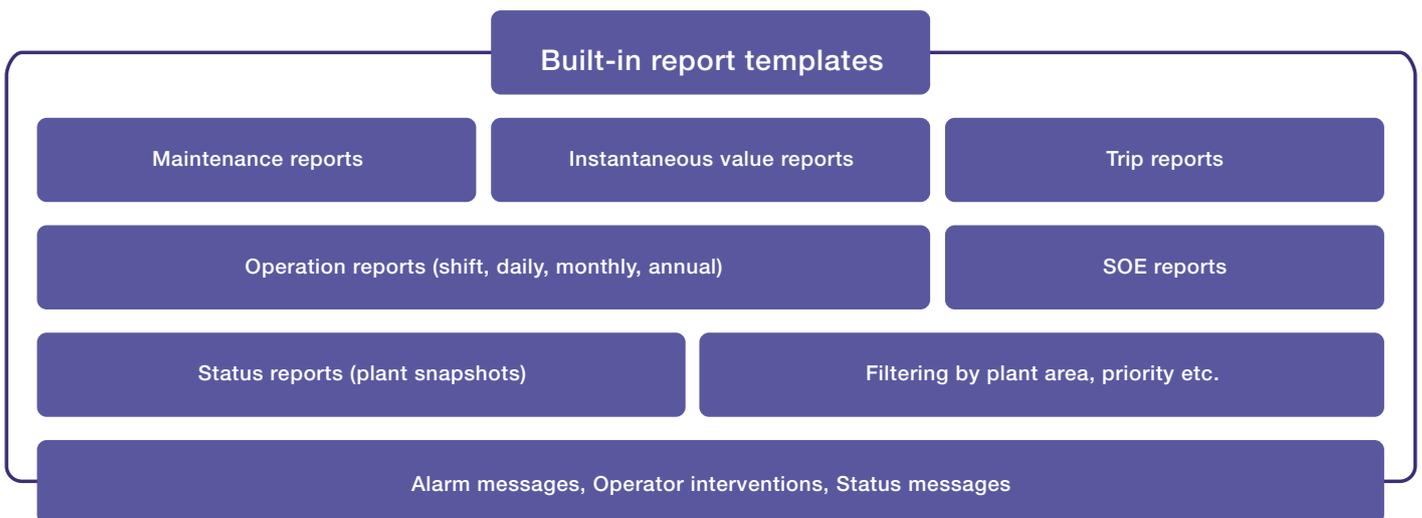
With S+ Operations, users can view real-time information and historical information simultaneously in a single view. Users looking at a trend can seamlessly scroll back in time to look at historical data without going to a separate historian station or a separate screen. All information from anywhere in the enterprise on cross-site and cross-plant networks is brought together in a comprehensive display. This data is then analyzed and transformed into useful information and presented to the users to make timely and accurate decisions.

Operator related displays present both, real-time and historical information on process tags, alarms and events etc. Desktop displays give managers concise, enterprise-wide information in familiar Microsoft Office formats right from their laptops. A discrete tag-ticker, continuously showing KPIs, live trends etc. can be pulled in if detailed information is required.

Right information to the right people at the right time can provide sustainable competitive advantage.

4 Advanced reporting capabilities puts critical information at your fingertips

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Built-in report templates

Maintenance reports	Instantaneous value reports	Trip reports

Operation reports (shift, daily, monthly, annual)	SOE reports

Status reports (plant snapshots)	Filtering by plant area, priority etc.

Alarm messages, Operator interventions, Status messages

S+ Operations
Process and asset optimization

Performance monitoring

There is strong pressure on today's businesses to maintain a high level of productivity. This requires a clear asset management and maintenance strategy to increase asset availability and performance, while maximizing operations and maintenance effectiveness. The key to reducing these costs is knowing what needs maintenance and, just as important, what does not.

S+ Operations combined with S+ Optimization's OPTIMAX® suite improves overall plant productivity and lowers maintenance costs by monitoring short-term and long-term degradation of plant equipment. Within S+ Operations, performance summary displays and detailed plant component displays are only one-click away and alert personnel how current operating conditions affect overall performance. The OPTIMAX suite includes specialized performance monitoring packages for the boiler, turbine, and related equipment in the power plant, RO (reverse osmosis) membranes in desalination plants, and water leakage detection in water infrastructure networks.

Streamlined maintenance

Asset performance alarms alert operators to degrading performance, while S+ Operations' integration with maintenance management systems (CMMS), such as SAP PM, allows for easy communication and navigation to asset-specific maintenance activities. Through S+ Operations, operators can easily create and submit new work orders or review status of existing work orders maintained in the CMMS system.

Additionally, S+ Operations provides alternatives to "paper" shift logs with its Shiftbook and electronic shift log options. Using these functions, shift changes are automatically noted in the operator shift log with open work actions passed on to the next shift "To Do" list (covers all shifts).

All together, these features reduce the plant's maintenance costs by moving toward condition-based maintenance and streamlining operation and maintenance work interactions.

Plant optimization

Optimizing asset performance requires information that is accurate, timely and actionable. Having this information leads to better decisions: whether to buy or sell power or fuel, to start or stop a unit, to replace equipment, or to perform preventive maintenance.

ABB provides a suite of plant optimization solutions that enable power and water plants to run at maximum efficiency while balancing the trade-off between revenues, life cycle costs and emissions. ABB's OPTIMAX suite consists of decision-support tools that continuously assess plant conditions and provide root cause analysis in case of deviations. OPTIMAX advanced process control (APC) solutions reduce emissions by optimizing combustion, shortening boiler startup times and improving coordinated boiler-turbine control and unit frequency response.

S+ Operations combined with OPTIMAX suite improves overall plant productivity
– Direct access to real-time and historical data
– Perfect integration with maintenance management systems
– Facilitates proactive and predictive maintenance
– Streamlines work processes

5 Maintenance is the largest controllable cost in business today

6 Water infrastructure performance displays
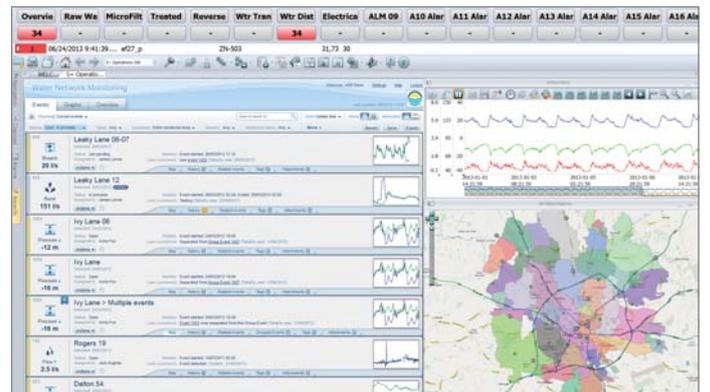
S+ Operations
Secure environment for your operations

Security

Implementing and maintaining a secure and reliable control environment with minimal effort and time is a challenging mission faced by all plant operators and personnel today. ABB actively participates on several major control system security standards committees including FERC, NERC, ISA, IEC and ISO. These committees provide security guidance in the form of system documentation and guidelines for every phase of the product and project development process. With this in mind, Symphony Plus has been designed with inherent security features in all core functional areas, including S+ Operations, to protect the integrity and reliability of system operations.

Based on the IEC 62351-8 security standard, S+ Operations defines rights and roles for a user or user groups with very fine granularity. Sophisticated authorization and access control provide a tight guard against unwanted activities.

The log-over function enables a fast and temporary switch between users in a running workplace, and the built-in configuration change management allows easy comparison and the virtually risk-free deployment of different configurations. The system also maintains an audit trail of changes made to process settings as well as configuration changes.

S+ Operations provides comprehensive diagnostic displays to present the health of the process and control system. In addition, system hardening is easily deployed to protect servers, workstations and supported network equipment.

Total and selective 'backup and restores' are possible through the system administration features. System nodes are replaced easily by deploying all original software and configuration data to the new replacement node.

ABB evaluates security updates from third-party software such as Microsoft, McAfee and Adobe with respect to relevance to and compatibility with Symphony Plus. All relevant updates are validated within seven days.

ABB fully understands the importance of cyber security and its responsibility in advancing the security of industrial automation and control systems. As our customers invest in new ABB technologies, they can rely on system solutions where reliability and security have the highest priority.

S+ Operations provides users with a secure and reliable operations environment with built-in security features
- User authentication
- Role-based access control
- Event logging/audit trails
- Backup/restore
- Hardened hosts
- Host firewall configuration
- Antivirus
- Network zones
- Security patch validation

S+ Operations
Life cycle management

Majority of the equipment in a plant will stay throughout the life of the plant. A DCS is one such set of equipment. For such infrastructure related investments, it is imperative that we think in terms of the total life cycle costs; these could be direct costs related to ongoing maintenance/upgrade as well as indirect costs in terms of operator training and intellectual property.

Control system life cycle management and investment protection have always been cornerstones of ABB's development programs. We serve our customers by crafting solutions that ensure the continued productivity, reliability and capability of all installed ABB assets. We develop new products in a way that allows for incremental adoption, minimizes risk to operations and maximizes investment protection.

For our long-time customers considering evolving their existing HMI platform(s) to S+ Operations, there is a seamless path forward. Existing console database and graphics from previous generation consoles like Conductor NT, Conductor VMS, PPB, PCView and others can be directly re-used in S+ Operations. This allows for continued use of the existing knowledge base within your plant without re-training the operators. Moreover, the evolution can be executed online, in parallel operation of the running HMIs. This online upgrade capability significantly reduces the down time and loss of production.

Supporting our mission to maximize your investment in ABB software is Automation Sentinel, ABB's control system life cycle management and support program. Automation Sentinel enables customers to keep control software up-to-date and maintain a flexible path forward to new system software technology. It provides the fundamental software support deliverables required to maintain operation and maximize the availability of the installed ABB control system.

Automation Sentinel program provides solutions to address the most common challenges faced by plant owners:
- Software maintenance and upgrades
- Network and information security
- Online access to relevant information
- Control system software performance checks

Maintain Operations and avoid loss of production
Higher productivity through
enhanced software functionality

Continuous optimization of your process operations
Improves availability, performance and
reliability with predictable costs

Reduce overall maintenance costs
Yearly subscription provides predictability
for budgeting

Complete flexibility
Improve your control system over time; always the
lowest risk path forward

Protect your intellectual property
Your operator graphics and control programs are protected
with new technology is implemented

Keep it safe, keep it secure
Complete peace of mind knowing that your plant
control system is prepared to thwart cyber attacks

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Power and productivity
for a better world™

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