Symphony Plus
S+ Operations
All information, in one place, presented for swift and prompt action. It’s time to sit down and take total control.
S+ Operations
Drive effective operations with complete plant information

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.

S+ Operations provides operators with distraction-free state-of-the-art process information and access.

S+ Operations seamlessly integrates all plant devices and systems.

S+ Operations allows for seamless and incremental integration of new products, technology and functionality without the time and expense of re-engineering and retraining.

S+ Operations transforms data into meaningful information and presents it in intuitive user-specific desktop displays for real-time business decisions.

S+ Operations’ superior integrated alarm management system includes the industry’s leading EEMUA 191-compliant alarm management analysis system.

S+ Operations provides users with a secure and reliable operations environment with built-in security features.

S+ Operations combined with OPTIMAX® PlantPerformance improves overall plant productivity.

S+ Operations unique system architecture is easily adapted to any power or water application.
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. These workplaces are optimized to individual preference and access rights. 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 a speed, simplicity and proficiency that defies 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
- 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
Protecting previous investments

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 and remote SCADA systems. Through its open architecture, S+ Operations flawlessly consolidates and rationalizes plant data to improve operator response to changing conditions, resulting in increased plant safety and uptime.

Through integration of traditionally isolated plant devices and systems, S+ Operations extends the reach of the automation system to all plant areas. The result is a simplified view of the plant.

Traditionally disparate plant systems and device data are easily accessed. The resident information is used by control strategies and higher level applications to produce tighter, more reliable process control solutions.

The open architecture design reduces life cycle costs by simplifying the task of integrating plant systems and devices. Additionally, the useful life is extended as the open architecture allows the easy integration of new off-the-shelf applications and products.

S+ Operations seamlessly integrates all plant devices and systems
- Total plant automation
- Perfect integration of heterogeneous systems
- Open architecture

Seamless life cycle management
ABB’s goal is to help its customers improve operational performance, and at the same time get as much value out of their existing investment as possible.

S+ Operations provides for easy and seamless upgrades to the latest software. Installation of S+ Operations workstation upgrades can be performed online and in parallel operation with the existing HMIs. Additionally, the existing console database and graphics can be directly reused in S+ Operations. This allows for the continued use of the existing knowledge base without retraining, and avoids production loss during the upgrade process.

ABB’s software management program, Automation Sentinel, is one of the most efficient ways to get the most value out of installed ABB control system investments. It protects past, present and future automation investments. This innovative software management program helps users keep their automation software current and provides them with an incremental and cost-effective evolution path to the latest S+ Operations software.

S+ Operations allows for seamless and incremental integration of new products, technology and functionality without the time and expense of re-engineering and retraining
- Manage life cycle costs
- Upgrade according to own timetable
- Preserve process graphics and operator knowledge

6 System architecture overview
S+ Operations
Reaching new levels of information management

Information management
Information is a key asset in business today. To achieve a sustainable competitive advantage, utilities must be able to adapt quickly to change. Reduced time to decision and action is critical to improving quality and productivity. The timely collection, transformation and distribution of reliable information is a significant issue.

Easy and flexible data access is essential for all operational and business decisions. All users, including operators, managers, engineers and maintenance supervisors, have unique requirements and viewing preferences for information. S+ Operations integrated information management provides support at every organizational level to improve efficiency and profitability.

S+ Operations removes barriers and transforms data into meaningful information, presenting it to all users in easy to understand user-specific formats.

In order to enable each user to work as efficiently as possible, S+ Operations has been designed to provide maximum flexibility and easy utilization.

S+ Operations provides the possibility to view real-time data and historical information simultaneously in one display. The practical advantages are seen when looking at trend curve values: users step through information over time without having to move from a real-time system to a separate historian.

Additionally, data is accessed from multiple history servers and other systems and combined in comprehensive displays - aggregating analog as well as digital trend data.

Sustain profitable growth by transforming data into actionable business decisions
S+ Operations is based on ABB’s long and extensive experience in the power generation and water industries. It has been designed to simplify plant management procedures by presenting all important information from anywhere in the enterprise on cross-site and cross-plant information platforms.

It provides the ability to collect and securely store business and process data from all plant sources. This data is then analyzed and transformed into useful information and presented to the users to improve efficiency and profitability.

Desktop displays give managers concise, enterprise-wide information in familiar Microsoft Office formats, without having to leave their desks. A discrete tag ticker, continuously showing key performance indicators (KPI), can be supplemented with a trend display when more information is required. While operator displays provide information in the control system environment, these displays are able to seamlessly present both real-time and historical trend data as well as alarms and events.

Sophisticated reporting functions draw on all current and historical process information that is retrievable from S+ Operations and other information systems. Reports are easily configurable to the specific needs of a plant, including customized reports.

S+ Operations includes ready-made templates for:
- Instantaneous value reports
- Sequence of events (SOE) reports
- Alarm messages, status messages, operator interventions
- Filtering by priority, plant area, etc
- Operation reports (shift, daily, monthly and yearly)
- Status reports (plant snapshots)
- Trip reports
- Maintenance reports

S+ Operations transforms data into meaningful information and presents it in intuitive user-specific desktop displays for real-time business decisions
- Seamless view of real-time and historical data
- Historical data from all plant sources
- Sophisticated presentation module
- Perfectly integrated into operator station
- Direct and quick access of historical information and real-time data
- Real-time database with millisecond resolution
- Clearly arranged event history display with integrated trend data graphics
- Data display via full clients and Web clients
- Discrete tag ticker for KPIs
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 and inhibiting.

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.
Electrical integration allows industrial and utility processes to be run at a higher level of availability and energy efficiency, and provides for a reduction of operational and investment costs.

A large step forward in terms of simplifying the integration of electrical systems has been taken with the introduction of the IEC 61850 standard.

S+ Operations provides native MMS communication with IEC 61850 IEDs in order to acquire and display typical measurements relevant to the electrical integration: three phase current, voltage and all protection values.

Direct native communication within S+ Operations represents an easy and fast solution that reduces the cost of the application and makes S+ Operations an integrated IEC 61850 device.

Moreover S+ Operations allows full control of the electrical structures modelling the most relevant power system applications. Our offering includes all relevant bay models such as transformer, generator, incoming, measuring, outgoing, busbar, variable speed drive and motor bay.

Electrical data and bay models have their own graphic representation on S+ Operations HMI, providing high level integration functions that enable the operator to:
- Create the proper links between electrical and process objects
- Support complete navigation from process to electrical views
- Group electrical data in the faceplate of the bay to which they belong
- Represent electrical equipment (circuit breakers, switches, etc.) in terms of the complete set of signals and conditions acquired via IEC 61850

S+ Operations provides electrical and process operators with an ergonomic environment that offers a process graphics in line with the users’ expectations, and which enables them to explore different aspects of the application either during normal plant operations or fault diagnosis.
S+ Operations
Process and asset optimization

Performance monitoring
Optimizing assets 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.

To assist with this, optimization tools, such as ABB’s OPTIMAX® PlantPerformance are only one click away in S+ Operations.

OPTIMAX PlantPerformance is designed for the performance monitoring of power and water plants. Comparing actual performance to expected performance at the current load, ambient conditions and operation mode, OPTIMAX PlantPerformance is used to monitor short-term and long-term equipment degradation. Performance summary displays and detailed plant component displays show how current operating conditions affect the plant heat rate and, therefore, plant fuel costs.

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 with and navigation to asset-specific maintenance activities. Together, these features reduce the plant’s maintenance costs by moving toward condition-based maintenance and streamlining operation and maintenance work interactions.

Plant optimization
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 optimization 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 PlantPerformance 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
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
Simple and flexible system architecture

Flexible, scalable fault-tolerant design
S+ Operations’ unique system architecture provides flexible and scalable configurations for small, medium and large power or water applications.

S+ Operations provides server-less as well as server-based solutions. Switching between these configurations is swift and simple. This flexibility makes adapting to evolving needs an easy step. All existing data remains untouched, the switchover to the extended system is easy and virtually seamless. The expense of becoming accustomed to the ‘new’ system is minimal: operator panels and well-established workflows remain the same.

For server-based applications, the architecture can be expanded over multiple levels in a hierarchical structure. Multi-redundancy and store-and-forward functions prevent data loss, while preserving full functionality and performance. Based on S+ Operations’ flexible and scalable framework, redundancy for all client applications is built into the system. The principle behind this is known as Multi-master. Simply stated, each server, at any level in the architecture, can be mirrored in as many redundant servers as necessary.

S+ Operations is a Windows-based, Web-enabled human machine interface providing outstanding information integration and user navigation within a standard Windows environment. S+ Operations integrates perfectly with Symphony Plus controllers, but can also be used with other ABB control families as well as third-party standard interfaces.

For remote access, S+ Operations delivers remote client options that include a pure thin client based on Internet Explorer.

With its ability to exchange information with heterogeneous systems, S+ Operations is an excellent choice as a common operator station. By selecting S+ Operations for the control room, operators have the ability to monitor and control all equipment in the plant for smooth day-to-day operations.

S+ Operations unique system architecture easily adapts to any power and water application
- Server-less architecture
- Server-based architecture
- Easy migration
- Perfect integration with heterogeneous systems
- Easy configuration and scalability
- Real-time database
- Multi-master architecture
- Hierarchical architecture
- Segregated or combined architecture
- Every desired level of redundancy possible
15 Server-less architecture | 16 Segregated architecture | 17 Composite (Multi-master) architecture | 18 Hierarchical (Multi-system) architecture
S+ Operations is designed to provide users with the most advanced, the most efficient and - at the same time - the most simple power and water operations system on the market.

Outstanding flexibility, scalability and reliability are provided by S+ Operations unique system architecture. Integration of all plant assets and evolution from the installed HMI is easy and seamless.

S+ Operations information management features provide detailed and clearly arranged displays of all plant data, including real-time information and historical data. Detailed and intuitive trend displays and flexible reports present pertinent, easy to understand information to all levels of the organization.

<table>
<thead>
<tr>
<th>Features</th>
<th>Benefits</th>
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<tbody>
<tr>
<td>Simple and flexible system architecture/structure</td>
<td>Low investment and low maintenance costs</td>
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<td>Large-scale networks possible</td>
<td>Expandable when needs evolve</td>
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<td>Flexible - for single and multi-system facilities</td>
<td>Adapts to any requirement - even the most demanding</td>
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<tr>
<td>Server-less and server-based installations possible</td>
<td>Adapts to any requirement</td>
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<td>Miscellaneous data from multiple servers seamlessly integrated in one display</td>
<td>Saves time, effort and human resources</td>
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<td>Any requested redundancy possible</td>
<td>Provides the maximum system stability and reliability</td>
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<td>Easy modification and expansion of configurations</td>
<td>Protects existing assets as the business evolves</td>
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Detailed and clearly arranged faceplates and displays simplify operator interaction for more reliable control. The advanced alarm management tool, including an EMMUA191-compliant alarm management analysis system, leads to greater awareness, faster response and better decisions.

S+ Operations embedded security features ensure complete system integrity. Optimization tools are only one click away. OPTIMAX PlantPerformance is easily integrated for superior plant efficiency.

S+ Operations satisfies customers by combining excellent technical features with outstanding economic benefits. All in all, S+ Operations drives effective operations with complete plant information and sustains profitable growth by transforming data into actionable business decisions.

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<tr>
<th>Features</th>
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<td>Active (real-time) data and historical information fully integrated in the information management system</td>
<td>Provides quick, easy and seamless access to all stored data from a single system</td>
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<td>Short-time historical data stored at every workstation</td>
<td>Enables a quick overview of the evolution of situations; gives the time and opportunity for correct decision-making</td>
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<td>Dedicated historical data servers</td>
<td>Guarantees data consistency under all circumstances</td>
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<td>Detailed human machine interface</td>
<td>Delivers intuitive, clearly arranged workplaces and direct access to all details</td>
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<td>Utilizes Web standards</td>
<td>Allows utilization of standard software and hardware</td>
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<tr>
<td>Perfect basis for ABB optimization tools</td>
<td>Facilitates proactive and predictive maintenance</td>
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