
ABB Ability™ System 800xA®

Safety Overview



System 800xA High Integrity Introduction

ABB has over 40 years of experience in the design, manufacture and implementation of process safety systems. With operations on all continents and dedicated safety system teams around the world, ABB provides not only highly qualified technical resources during project delivery, but also ensures competent local support and service in operation.



The ABB Ability™ System 800xA High Integrity safety system was released in 2005 and is TÜV certified for SIL 3 operation according to IEC 61508 and IEC 61511.

Through System 800xA's common operations, engineering and information environment for Basic Process Control Systems (BPCS) and Safety Instrumented Systems (SIS), ABB provides safety solutions that are easily scalable from a few loops to completely integrated safety systems.

In addition to standard safety system functionality, ABB's High Integrity safety system includes a comprehensive array of extended automation components such as faceplates, graphic elements, trends, document links and alarms and events.

The industry leading 800xA Extended Operator Workplace provides a unique collaborative operator environment that can include process, safety and electrical control functionality. This common

environment ensures efficient operator response to both normal and abnormal conditions.

As part of the System 800xA extended automation solution, the High Integrity safety system is tailored for a wide range of industry applications including:

- Emergency & Process Shutdown (ESD and PSD)
- Interlock Systems
- Burner Management/Boiler Protection (BMS)
- Fire and Gas (F&G) Systems
- High Pressure Protection Systems (HIPPS)

The 800xA Safety Offering as described in this document includes:

- Flexible diverse system architecture
- Powerful integrated control and safety functions
- Safety lifecycle services
- Complete SIS portfolio and experience

System 800xA Safety Lifecycle



With increasing acceptance and implementation of ‘smart’ safety automation technologies, the process industries are experiencing a revolution.

To meet their functional safety management requirements, end-users now demand closer integration of their safety and control systems, safety functions at varying process states, and flexibility, scalability, and reusability of their safety components.

With a wide variety of options available, the challenge is to determine the safest, most reliable and cost effective safety instrumented system (SIS).

The standards provide some guidance, but by engaging ABB during all phases of the safety lifecycle, we can help you choose the right solution for your safety and business needs.

Design, Engineer and Build the SIS

ABB’s engineering environment provides graphical design of the entire SIS loop – from field inputs and logic solver to the safety loop’s final elements. We provide a comprehensive library of standard reusable TÜV certified components.

These pretested proven libraries significantly reduce the time required to engineer, test, and maintain safety applications, while minimizing project risks.

Reducing risk through High Integrity Safety Automation

ABB Ability™ System 800xA® improves process availability while reducing the risk to overall plant operation by providing a common environment for production control, safety supervision and production monitoring. Within this environment, System 800xA offers a complete Safety Instrumented System (SIS) solution, complying with the IEC 61508 and IEC 61511 standards.

ABB offers, as part of our standard portfolio, not only the logic solver, but TÜV certified equipment for the entire safety loop, consisting of field instruments, safety controllers and final control elements (positioners).

The Integrated Control and Safety System (ICSS) based on System 800xA and its Aspect Object Technology brings significant benefits to end users. One of the main benefits being risk reduction in each phase of the ICSS systems lifecycle including Engineering, Installation and Commissioning, and Operation and Maintenance. Risk reduction can be achieved in the following areas:

Engineering

- Reuse of components via certified Libraries
- Engineering tool limits programming choices to assure safety integrity and standards compliance
- Compiler restrictions ensure correctly compiled code is downloaded to safety controller

Product (High Integrity Safety)

- Diverse architecture and diverse implementation
- Elimination of common cause failures
- Redundancy for high availability and hot swap
- Certified remote I/O solution for flexible installation
- Specific SIL3 IO interfaces to fulfill the most demanding industry applications

Operations

- Single operator environment with personalized workplaces for timely response to abnormal conditions
- Consolidated alarms and events for ICSS
- Built in, TÜV certified override capability

Maintenance

- Standard certified interfaces between DCS, safety, alarm and events, history, asset management etc.
- Validation of changes against live I/O prior to download (load-evaluate-go function)
- Re-authentication for maintenance features including confirmed online write
- Built in partial valve stroke testing
- Difference report and audit trail for root cause analysis



Integrated Process Control and Safety

The ABB Ability™ System 800xA extended automation system has been designed from the beginning as an integrated control and safety system. It's High Integrity component is a "next generation" safety system built according to the requirements of IEC 61508 Edition 2. Not only does the 800xA High Integrity safety system meet the traditional safety requirements of hardware safety integrity and behavior in the presence of a fault condition, it has been specifically designed to also focus on enhanced diagnostic coverage, diversity, and systematic safety integrity.

The Benefits of Integration

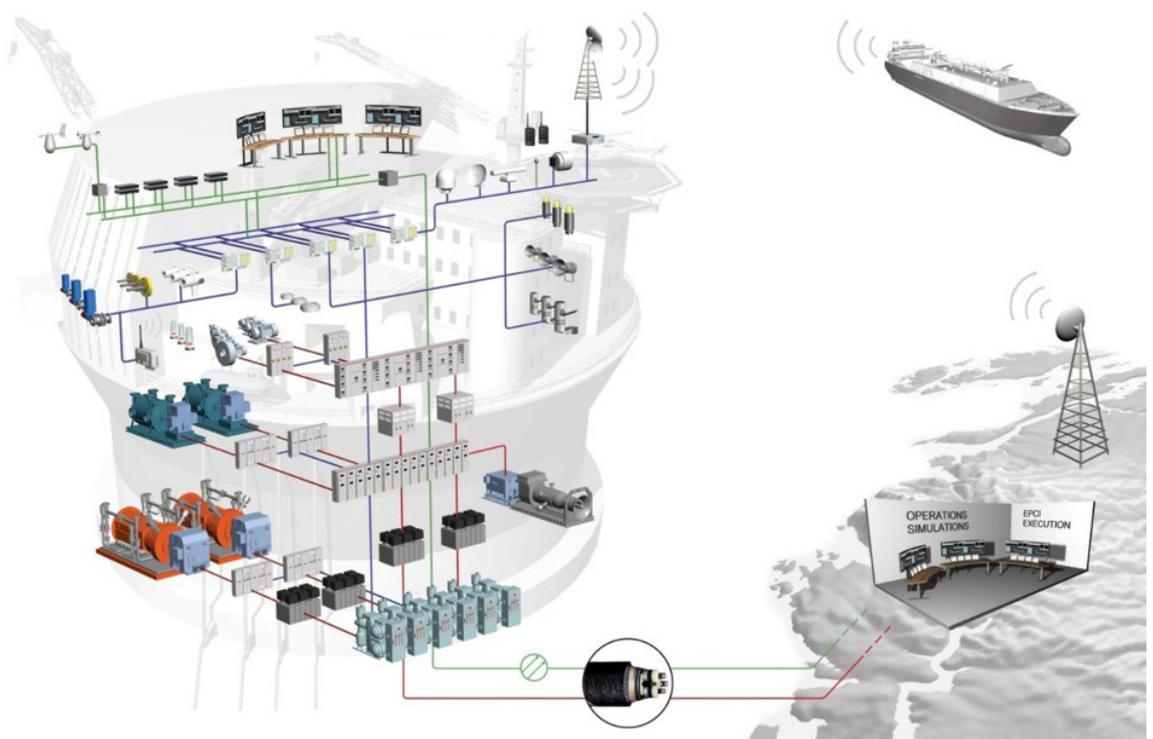
The operational aspects of safety systems are under increased scrutiny. Beyond the purely financial benefits (which focus on reducing operational cost throughout the system lifecycle) the real driver is safer operations.

The industry is struggling with increased system complexity. A larger number of systems in any given plant, combined with a competence pool

that is depleting through retirement, increases the risk of safety critical mistakes. An obvious counter-measure to negate this risk is a reduction in both system complexity and number of systems employed.

By installing an integrated control and safety system, the following operational benefits can be achieved:

- A single process automation platform in the facility
- One operator interface for operations to learn and operate
- One engineering tool for programmers to learn
- One hardware platform for maintenance to maintain
- Less field splitting and communications required
- Easier design and field wiring
- All ICSS information seamlessly available for both the DCS and Safety system
- Automated SIS bypasses and enables can be used to coordinate with process operations



System 800xA High Integrity TÜV & ISA Secure® certified to industry standards

ABB Ability™ System 800xA® High Integrity is designed, delivered and supported in accordance with the latest versions of the strictest safety standards including IEC 61508, IEC 61511, IEC 62061, EN 954, NFPA 85 and NFPA 72.

Our TÜV certifications include the safety system product certification, the product development and test organization certification, our functional safety management system and individual certifications.

Product Certification

The 800xA High Integrity product including controllers, I/O modules, communication modules, firmware, libraries and engineering tool are certified according to IEC 61508 Edition 2 and IEC 61511-1. All relevant standards and tests are documented with the certificate and report which are available upon request.

Product Development Organization

ABB's Control Technologies Development organization has been certified by TÜV for creating and maintaining a management system that meets the requirements of the IEC 61508 standard.

ISA Secure® System Security Assurance (SSA™)

ABB has achieved ISA Secure® System Security Assurance (SSA™) Level 1 certification for System 800xA version 6.1.1.x according to the IEC 62443 international cyber security standard. This covers core components typical of an industrial control system delivery including:

System 800xA Software
Operations (HMI)
Engineering
High Integrity Extensions (safety)
Connectivity for AC 800M and AC 800M HI controller families
OPC UA Server software

System 800xA Hardware

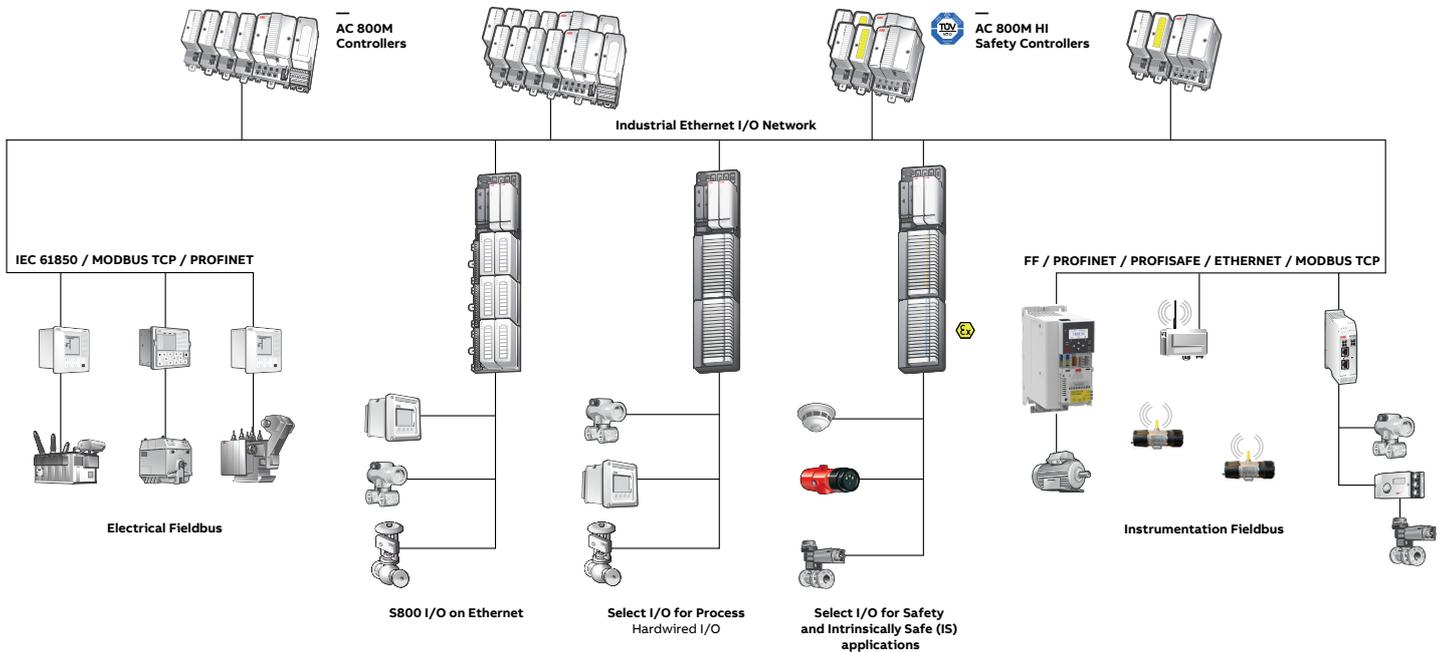
AC 800M and AC 800M HI controller families
Select I/O for process
Select I/O for safety
S800 I/O on Ethernet
S800 I/O via Modulebus
Associated networking and media conversion components.
(NE800 network equipment including the layer 2 Switches and RNRP Firewall Routers I/O network communication devices for AC 800M, Select I/O and S800 I/O)



System 800xA High Integrity is certified to SIL 3 by TÜV to the IEC 61508 and IEC 61511 standards for Safety.
System 800xA is also certified by ISA Secure® System Security Assurance (SSA™) for Software and Hardware.
(System 800xA 6.1.1 LTS versions)



System 800xA High Integrity Flexible I/O solution architecture



ABB's System 800xA High Integrity has a flexible and diverse architecture, which not only meets the requirements of the safety standards, but can address almost any architecture required for project implementation. The available configurations include:

- Integrated (separate process and safety controllers on the same control network)
- Combined (process and safety applications in the same physical controller)
- Separate (separate process and safety controllers on separate networks with a hardwired or direct communication link between controllers)
- Independent (the high integrity controller can be used with any HMI or DCS system separate from System 800xA)

These available options enable users to implement their preferred architecture using the proven certified 800xA High Integrity solution.

It is the diversity of both architecture and product implementation that enables 800xA High Integrity to be certified by TÜV according to IEC 61508 Edition for SIL 3

without resorting to redundancy. Redundancy is available when high availability or hot swap are required.

System 800xA High Integrity's diversity comes from a combination of technology and implementation. The specific measures implemented (to achieve systematic safety integrity per the standards) are described below:

Product Diversity

- Diverse application execution engine in the controller and safety module
- Diverse architecture (MCU & FPGA) in I/O modules
- Use of different toolsets during design and implementation
- Different manufacturers of electronic components

Development / Implementation Diversity

- Application of rigorous TÜV certified Functional Safety Management System
- V-Model implementation
- Coding Guidelines
- Independent development and validation teams (Malmo and Vasteras, Sweden)

System 800xA High Integrity controller hardware

System 800xA High Integrity features a flexible and scalable SIL compliant design. The modular design of the hardware platform supports safety applications from small to large, single or redundant, with local or remote cabinet installations in configurations from integrated to combined to independent.



Redundant AC 800M High Integrity controller.

AC 800M High Integrity Controllers

The AC 800M HI controllers offer a SIL3 TÜV certified control environment for process safety in a single controller, both in integrated and stand-alone environments. The AC 800M High Integrity controller is realized by combining a processor module with a safety module (i.e. PM857, PM863 and PM867 with a SM812 module). Multiple controllers are available to provide scalability and flexible redundancy schemes are available enable up to and including Quad configuration.

Redundant S800 High Integrity I/O.



Hardware and scalability

The Controller hardware are scalable with three performance and size options. The PM857 for up to 128 I/O points and the PM863 and PM867 when larger applications and more I/O is needed. In addition to SIL3 certification, all controller types are ISA Secure CSA certified to SL-1.

In addition to editors compliant with IEC 61131-3, Control Modules and Diagram editors are provided for object-oriented design and engineering of the safety applications.

The HI controllers offer flexibility of network design as they can be used for integrated but separate safety operations or for fully integrated applications where safety and business- critical process control are combined in one controller without sacrificing safety integrity.

Safety Communication

From version 6.2 onwards, 800xA complies with safety communications protocol for ABB (eg FENA21) and third-party device over PROFINET. This communication is enabled by a layer of communication over the PROFINET that uses black channel communications technology.

TÜV Certification

The System 800xA High Integrity products including controllers, I/O modules, communication modules, firmware, libraries, and engineering tools are certified according to IEC 61508 Edition 2 and IEC 61511-1. All relevant standards and tests are documented with the certificate and report which are available upon request.

SIL compliant application environment

The System 800xA 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 I/O hardware



—
Select I/O High Integrity.
A redundant TU865 and
TUS810 equipped.

Flexible I/O Solutions

Two SIL rated systems are available as part of System 800xA's High Integrity offering:

- **The S880 High Integrity I/O system** is a distributed, highly modularized and flexible I/O system, providing easy installation of I/O modules and process cabling. S880 I/O modules and their termination units can be mounted and combined in many different configurations. Within the S880 I/O family, there are SIL3 compliant modules for safety critical applications including 4 - 20 mA analog inputs, 24 Vdc digital inputs and 24 Vdc digital outputs.

Analog inputs support HART routing and the digital inputs support local time stamping of signal changes for high accuracy sequence-of-events logging. Redundancy of the S800 I/O modules can increase system availability and allow for maintenance activities, such as hot swap, without process interruption. Non-interfering Communication Interfaces (sidebar) are available and can be used for non-safety critical functions. These communication modules are installed to the left of the safety module (SM812 for example). See the ABB Safety Manual for the latest list of interference free modules available.

- **Select I/O for Safety** is a modular, ethernet based, single channel granular I/O system that promotes using xStream Engineering to help decouple project tasks, minimizes the impact of late changes, and optimize project schedules. Select I/O for Safety offers flexible redundancy schemes and conditions each individual signal coming from the field with a Signal Conditioning Module (SCM) designed for safety applications.

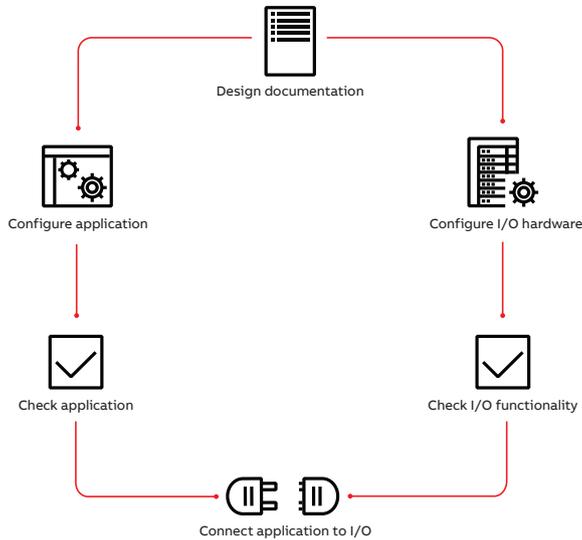
In addition to SIL 3 certified 24 V HART enabled AI, AO and 24 V DI, DO SCMs, intrinsically safe and higher amp AI and DO SCMs are available. To reduce the need for ancillary hardware, a 3 A DO is available.

A SIL3 certified analog Input Signal Conditioning Module for 2/3/4-wire devices, capable of supplying 1.2 A field power is also available. Each SCM offers line monitoring, current limiting, galvanically isolated and is rated for Zone 2/Class 1 Division 2 environments with extended temperature ranges (-40 - +70°C).

—
Redundant Select I/O
High Integrity I/O.



System 800xA High Integrity Integrated Engineering



— System 800xA security protection model.

Providing a single, accurate, source of system information helps ensure data consistency and improves engineering performance throughout the lifetime of the plant automation system. Working within a common engineering environment, 800xA Engineering supports a consistent information flow from design, through installation and commissioning, to operation and maintenance. In general, System 800xA Engineering features include:

xStream Engineering

The Select I/O for Safety together with the innovative xStream Engineering tools helps decouple project tasks, minimize the impact of late changes and supports standardization of hardware and cabinets helping projects come on time and under budget.

Graphical Function Design

Graphical function design enables engineers to be engineers instead of programmers. Provides graphical design of the entire control loop - from field devices to process logic. This enables easier engineering and maintenance of IEC 61131-3 applications.

Device Management

Device management for 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.

Reusable Solutions

Facilitates the incorporation of “best practice” standards. The common framework allows logically defined solutions to be quickly reproduced and adapted to meet specific needs with minimum engineering and re-validation. When modifications are made to existing standards, instances are automatically updated.

Operator Graphics

Interactive operator graphics can easily be customized through the use of predefined elements and symbols. See the System 800xA Operator Effectiveness brochure for additional details.

SIL compliant application environment

800xA’s object oriented engineering environment with SIL compliant function libraries efficiently supports the entire safety lifecycle. The 800xA 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.

A series of safety measures are implemented both for the downloading process and runtime environment. These measures form an important part of the firewall mechanism for combined Control and Safety. CRC protection on different levels, double code generation with comparison and compiler with revalidation are just a few examples of the embedded firewall mechanisms.

Certified Libraries

Control Builder is delivered with an extensive set of predefined type solutions stored in standard libraries. These include data types, functions, function blocks and control modules that can be used to create safety applications. The SIL certified objects and functions in the standard libraries are identified with a SIL marking in the engineering tool.

All necessary SIL certified objects and functions can be found in the certified engineering libraries. Other available libraries contain some components certified for use in SIL compliant applications. See the AC800M High Integrity Safety manual for details.

System 800xA High Integrity Core Functionality

The High Integrity safety system has many built in functions that simplify engineering and ensure consistent and safe operations. A number of these functions are actually part of System 800xA and as such only need to be engineered or configured once for both the process control and safety systems (yet another benefit of the integrated solution). These function include:

- System security and embedded firewalls (Access Control, Confirm Operations and Force Control)
- Access control to SIL applications such as Read, Configure, Confirm or Confirm and Access Enable
- Time tagging events to millisecond accuracy for Sequence of Events (SOE)
- Time stamped audit trails document all changes made to the system by user and change type
- System diagnostics and Difference Report
- Safety supervisory functions

Sequence of Events

By time stamping process and safety events to millisecond accuracy, common event and alarm SOE displays can help identify root causes.

Access Management

During process startup, maintenance, and testing, it is necessary to inhibit specific safety functions. With System 800xA, specific inputs may be inhibited and outputs bypassed through standard-ized operator dialog.

Care has been taken in the design of access control, safety integrity and bypass status overview of System 800xA to combine ease of operation with maximum safety integrity.

Diagnostics

There are extensive system and hardware diagnostics including CPU load, ethernet statistics and status of controllers, I/O, communication, power supplies etc. System status viewers provide detailed information about the health of each component.

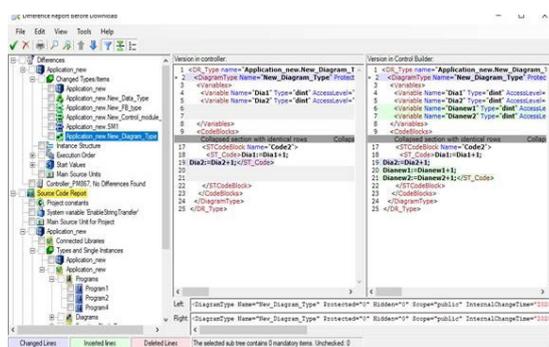
By using different technologies in a redundant scheme (diverse redundancy) and combining with voting, software diagnostics and diverse implementation, it is possible to avoid Common Cause Failures and meet the reliability SIL 3 requirements without hardware redundancy.

Connectivity and Interfacing Options

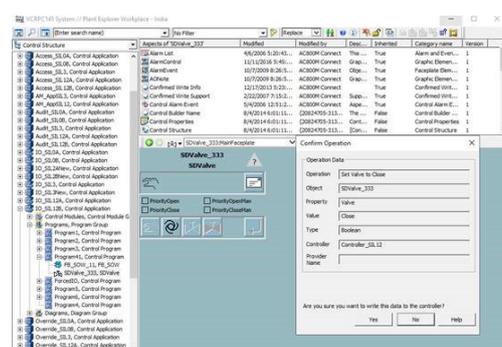
In addition to the TÜV certified safety peer to peer protocol, System 800xA comes with certified interference free communications modules for Modbus RS232, Modbus TCP, OPC, Profinet, Profisafe, and other ABB protocols.

These options enable safety data to be shared with other systems for the purpose of information and display. Data may only be written to the safety controllers via the TÜV certified confirmed on line write functionality or through use of the non-SIL control element.

Difference report – code comparison before download.



Plant Engineering Workplace.



System 800xA High Integrity Core Functionality



— Operator using a world class operator station at BP Sangachal.

The latest version of System 800xA provides capabilities that reach beyond earlier versions, creating benefit opportunities with integrated features such as:

- Advanced alarm handling and analysis
- High performance operator environment
- Enhanced asset management capabilities
- Fieldbus technologies supporting fully digital instrumentation
- Standardized integration capabilities with plant and enterprise systems
- Integrated safety functionality (SIL3)
- Built in procedural control functionality
- High availability control logic management (LEG)
- Integrated electrical systems
- Wireless infrastructure for operations, maintenance and process instrumentation
- Integrated video for visualization of critical process equipment
- Virtualized server and client software
- Secure communication via PROFI-safe support
- Robust cyber security protection

The power of integration can provide improvements in areas such as collaboration, management of change and operational effectiveness. Focusing investment in these areas will yield significant results as described below.

Personalized Workplaces

ABB Ability™ System 800xA provides a single, consistent, and intuitive human system interface to access and interact with information included

within the extended automation scope. In day to day operations, the safety level of a plant depends mainly on the quality of the equipment, the execution of different activities, and the work flow process management. Analysis of major accidents and catastrophes have shown that a series of unfortunate coincidental events have taken place prior to such incidents, and that adequate actions were not taken in the first critical phase of fighting them. Therefore, knowledge, information availability, and overall plant awareness are the keys to the daily achievement of plant safety.

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. This allows a single window environment to include SIS field devices, I/O, and logic solvers, alarm and events, asset optimization functions, safety reports, etc.

Therefore, by virtue of the system's integration and its ability to link to all information aspects of a process or safety object, root causes can be quickly identified and analyzed; allowing users to react to specific process and safety related events in a safe, consistent, and timely fashion.

High Performance Operator Environment

Once the aggregated information is available within the control environment of System 800xA, the next step is to consider the effects and advantages of human factors on operator performance. System 800xA provides the foundation for optimal presentation of information to the operator as well as focusing on human factors and the physical environment with the Extended Operator Workplace (EOW). The EOW comes standard with high performance features such as:

- Advanced keyboards for multi-client handling with hotkeys
- Directional sound system and integrated dimmable lighting
- Motorized, adjustable monitoring positions
- Pre-integrated operator desk system with adjustable desk/monitor positioning
- Micro-ventilation for optimal comfort

System 800xA High Integrity System Security

The Rocky Relationship between Safety and Security

Users have connected (interfaced) safety systems to BPCS systems since the mid 1980s and aimed to develop tighter connectivity since the mid 1990's. These efforts were based on proprietary protocols until the adoption of open network protocols and Windows use in industrial control systems increased the connectivity to business systems and at the same time exposed them to the same security issues (virus, cyber attacks, etc).

The key to security is to ensure that the integration between the safety system and the Basic Process Control Systems (BPCS) DOES NOT compromise Functional Independence and to define the best practices to secure an industrial system and in particular safety systems in this integrated environment. This section provides an overview of the security measures that are built into the System 800xA integrated control and safety system.

System security and embedded firewalls

At the highest level, 800xA safety system integrity is protected through inherent system security features, such as user log-overs, data access

controls, and advanced security features. Operator actions in the system can be assigned different permissions. This assignment defines the permissions a user needs to perform his/ her duties. Examples of permissions are: Read, Configure, and Operate. Time-stamped audit trails document all changes made to the system in terms of user and change type.

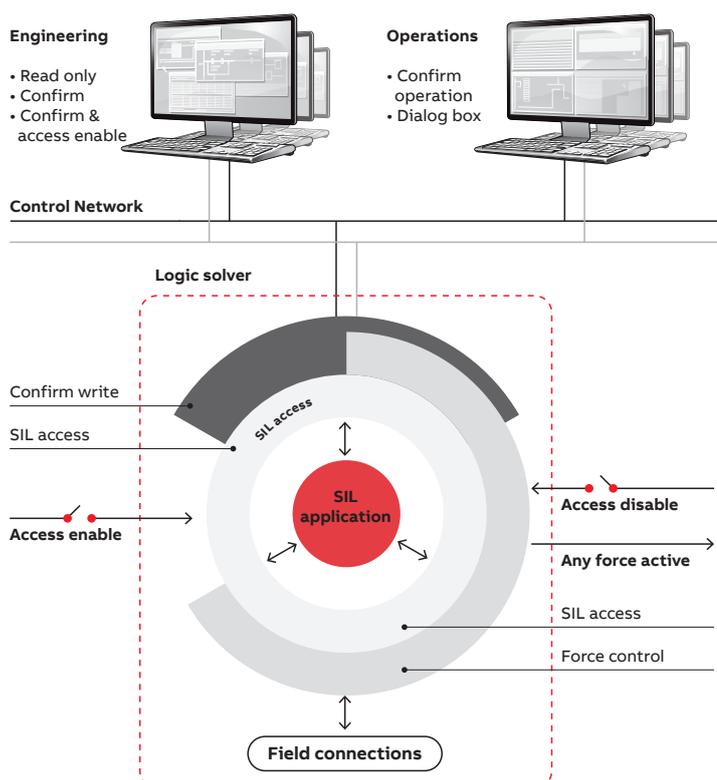
Embedded firewall mechanism (access control) Access Control to applications, Confirm Operation and Force Control are all firewall mechanisms (Access Management) embedded within the safety controller.

Access Control to SIL applications includes functionality for configuration, operations and maintenance. When designing a SIL application, each safety object is given an applicable access level; Read Only, Confirm or Confirm and Access Enable. In Operations, these SIL access levels are automatically enabled. However for the highest access level, a physical input must be enabled to secure authorized access. When Access Enable is active, permission is given to make online changes in the SIL application.

Confirm Operation, together with Access Control, is the embedded firewall mechanism for safe access of object variables during operation and maintenance. Force Control, Override Control, or Bypass Management functionality are necessary to maintain availability of the process in many situations, for example during automatic startup or maintenance of SIS related field equipment. The Force Control in the AC 800M HI follows the lifecycle of the SIS. During design of a SIL application, the safety engineer defines the maximum number of concurrent forced inputs and outputs.

During operations and maintenance, the Access Management software keeps track of the active number of forced I/O points. This information is presented via the safety operator's personalized workplace. The Operator may set and reset forces from the workplace. For an emergency reset of all forces a firmware function including a dedicated physical input is available in the Logic Solver. This both complies with regulatory requirements as well as reduces time consuming application design, implementation and testing.

System 800xA security protection model.



System 800xA High Integrity

The Power of Integration

Data Collection, History and Visualization

Timely collection and distribution of reliable information to the plant's decision makers is critical in today's production environment. The information platform at the core of System 800xA provides the ability to collect and securely store business, process, and safety data from all plant sources. This data can be analyzed and transformed into useful information, and presented to plant users to improve operations efficiency, safety, and profitability.

Asset Optimization

System 800xA Asset Optimization significantly increases control and safety system availability while reducing maintenance costs through early detection of asset performance problems. As one of the integrated applications, the 800xA Asset optimization software has access to all of the relevant plant information and can monitor, assess, and report equipment conditions in real time to reduce costly corrective and preventive maintenance activities.

With an integrated control and safety system, it is possible to implement a common asset management strategy with no additional application programming or interfaces.

Alarm Management – An Extra Layer of Protection

System 800xA's built in alarm management functionality gives operators a common view of all alarms and events that are part of the integrated solution including process, safety and electrical systems. This integrated view helps operators effectively manage plant operations and abnormal conditions through the use of alarm management functions such as alarm grouping, shelving and hiding, as well as metrics continuously calculated according to EEMUA 191 and ISA 18.2 standards.

Management of Change

Incremental changes to process automation systems are required today more than ever due to regulatory changes, expansions or additions, optimization, and product variances. In some industries, it is acceptable to have frequent shutdowns to safely incorporate these changes. Adversely, in mission critical, continuous processes such as oil and gas, petrochemical, and power,

shutdowns are few and far between. In most cases, major outages in these types of process applications will only occur every 3-6 years, thus changes to a control system's configuration are a necessary and acceptable practice.

ABB Ability™ System 800xA can efficiently facilitate the management of change process. In addition to tracking and documenting change through features such as "audit trails", there are many features that minimize risk when implementing change, such as:

- Change verification. Finding mistakes prior to download with Difference Report for application code and graphics.
- Stepwise change introduction through library versioning
- Cross referencing tool to identify all instances of variables or process points
- Simulation against "soft" controller or an isolated on line controller running against live I/O
- Impact analysis of live versus an "evaluation" version of the program using the Load-Evaluate-Go feature



Why ABB



Experience

For over 40 years, ABB has successfully delivered and installed safety systems in more than 55 countries worldwide. With operations on all continents and dedicated safety system teams around the world.

Our portfolio of safety systems consists of standalone safety systems (Independent HI) and completely integrated control and safety systems (System 800xA HI).



Knowledge

We offer a broad portfolio of safety solutions and applications for different industries and different applications. Our safety application expertise ranges from Burner Management systems (BMS), Emergency Shut down systems (ESD), Fire and Gas systems (F&G) and High-integrity pressure protection systems (HIPPS) among others.

Additionally ABB follows best practices in Functional Safety throughout the design, installation and commissioning of project, majority of which are also certified by independent safety assessors.



Cyber Security

ABB's comprehensive approach to cyber security addresses both customer needs, industry standards and internal development processes. This ensures a secure safety system by including risk mitigation system features on identified potential risks.



Service

ABB provides not only highly qualified technical resources during project delivery, but also ensures competent local support and service in operation. We work hard with end-users to maintain and evolve existing installations, thereby maximizing customer value and ensuring safe plant operation.



Life cycle

Many existing safety systems are not compliant with today's safety standards and lack the basic functionality and compatibility with other process control systems and related applications needed to sustain the availability of your plant.

ABB's Safety Evolution process can help you get there. A modern safety system like ABB's Independent HI or System 800xA High Integrity, meets all the current standards, but unlike previous certified systems, it can meet SIL3 without the need for redundancy or voting.

Evolution to High Integrity will enable you to be safe, secure and compliant while still transforming your operation to meet your business goals.



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