SIS Modification Services

- Minimize risk and deliver predictable SIS modifications
- Ensure your SIS is up-to-date
- Reduce downtime
- Provide verification of the modification
- Ensure project audit trail is complete

Safety Instrumented System (SIS) Modification Services performed by Emerson-certified specialists will help ensure straightforward, predictable, and documented modifications, in accordance with the IEC61511 Safety Life Cycle.

Introduction

A safety instrumented system needs to keep in step with changes to your process, operations and technology. Each modification offers advantages, as well as potential risk. Poorly planned or badly implemented modifications could compromise safety and/or availability of the system. Modifying the SIS can be a worrisome task, but Emerson can reduce your worry and grant peace of mind. Emerson personnel are specifically trained to handle a variety of SIS tasks, including planning, management and implementation of SIS modifications, including changes to the hardware, changes to application software and upgrading embedded software/firmware with added functionality. Through extensive experience with the product, and knowledge of IEC 61511 requirements, our professionals will ensure that your SIS modification are trouble free.

By applying auditable, established procedures using competent resources, safety integrity can be maintained and easily demonstrated.

Challenge

SIS modifications pose potential risk – risk that the system can no longer protect your people and your investment, plus risk that the modification could cause long and costly downtime. The lifecycle approach in IEC61511 addresses each modification as a small project. Each modification should involve all assessment and implementation activities appropriate to the extent of the change. It requires that competency in each skill is consistently applied using an auditable Safety Management System (SMS).

Plant owners are challenged by the vast array of skills required to maintain a safe working environment and meet production targets. How can their personnel implement a complete SIS modification process when their skills are focused on process safety, improving productivity and product quality?

Compounding these sometimes conflicting demands, local authorities expect that the safety integrity of the SIS is competently managed. Changes must be consistently implemented and auditable. One of the important aspects of the IEC61511 Safety Life Cycle is the requirement for documentation and an audit trail. Emerson's experience, as well as our work processes, will ensure that the SIS modification is planned correctly, executed properly, and documented thoroughly.

Benefits

Emerson provides qualified personnel, using certified procedures to simplify your modification process. Our investment means that you can employ the best resources when you need it.

Emerson SIS Modification Services will:

Minimize Risk and Deliver Predictable SIS Modifications: A carefully developed and executed plan is key to successfully performing SIS modifications without unexpected surprises. Emerson's SIS Modification Service includes an impact assessment of any change to ensure that all effects are known and accommodated for. This information is then input into our work processes to generate a plan for the modification. Emerson works with maintenance and operations staff to ensure the modification is effective and accounts for all planned facility shutdowns. If the modification needs to be staged over several phases, Emerson ensures that the plan takes this approach into account.

Ensure your SIS is Up-to-date: Emerson technologies are subject to constant development and enhancement. These enhancements benefit our customers with new features that can improve plant performance. Required upgrades can be planned with the advantage that the new features are configured for maximum operational benefit at the same time.

Reduce Downtime: One of the worst things that can occur is difficulties during modification that cannot be resolved quickly and easily. Emerson personnel help to ensure the risks are properly identified and contingency plans are in place should issues occur. When intentional shutdowns or bypassing of systems is required, Emerson strives to minimize downtime. Depending on the existing architecture, some modifications may be made online.

Provide Verification of the Modification: After the modification has been implemented, it needs to be verified that the modification was performed correctly. Additionally, it needs to be established that no changes to the application occurred that were not intended. Emerson personnel have off-line verification tools that allow a comparison between the pre-and post-modification database. If required it is also possible to execute a simulated test on the actual application without any impact on the process.

Ensure that your Project Audit Trail is Complete: It is not enough to simply perform the modification. Per IEC61511, any modifications to the system must be properly documented. Emerson uses detailed procedures, as well as checklists, to ensure that the modifications are documented properly. Emerson also assists with updating your system in the Safety Management System (SMS), which ensures that all future support calls will be based on the latest information about your system.

Service Description

Evaluation Phase: This phase captures the architecture, system information, and hardware and software version information for the system. It is designed to discover the customer requirements, including schedules for planned shutdowns and relevant plant maintenance activities. It also includes an evaluation of how the SIS is being operated and performing.

This information is then used to determine a modification strategy and recommendations. This strategy will consider the following items:

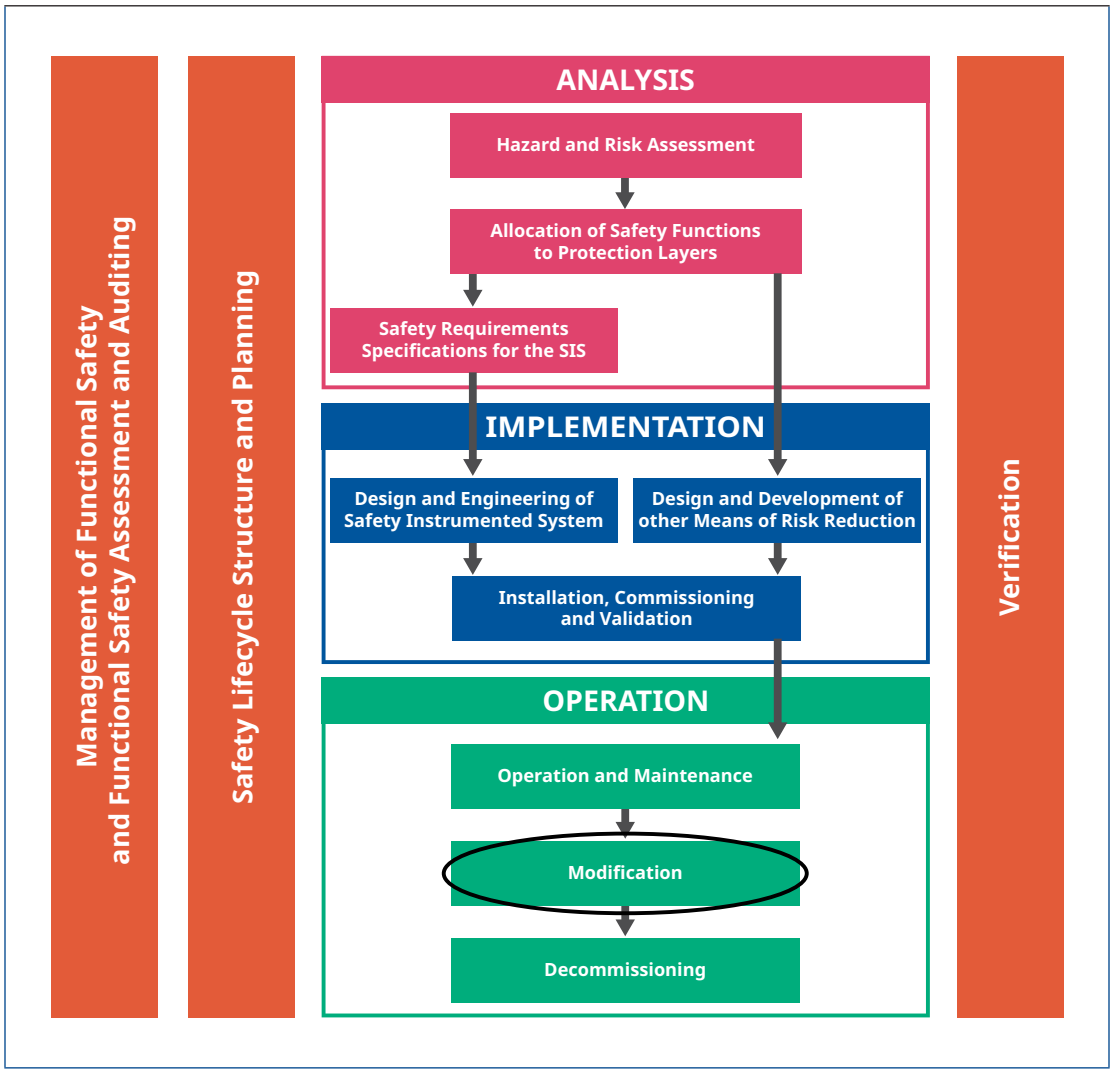
- Evaluation of the hardware and software requirements for modification of the SIS.
- Evaluation of the current system (service packs, applied patches, security, redundancy).
- Assessment of the reasons for the modification (added functionality, regular update, fix).
- An assessment of the validity of the modification in relationship to the application philosophies to ensure that a potential knock-on effect by the modification is determined ahead of time.
- Determination of the modification path (whether the modification can be from current version directly to the target version, or if any intermediate steps are required).

- Determination of whether the modification will be executed on-line on the actual SIS or off-line on a temporary Emerson or customer owned system. The latter solution is typically required if the modification has a relatively large scope, but the shutdown window for the process is relatively small or nil.
- Review of related Knowledge Base Articles (KBAs) and Release Notes for known issues, resolved issues, and new functionality.
- Recommendations regarding the current version of the overall SIS and Basic Process Control System (BPCS).

This evaluation is conducted in a coordinated manner considering any parallel or future system modifications. While the SIS modifications are largely release independent, some cases require the system to be in a certain state first. In other cases, it may simply be a better strategy to do the system modification prior to or in parallel with the SIS modification.

IEC 61511 Safety Life Cycle

Meeting regulatory requirements such as the IEC61511 Safety Life Cycle requires a partner with experience, and with the best available technology and services.



SIS Modification Services address IEC61511 during the Modification phase of the Safety Lifecycle.

Planning Phase: This phase builds upon the evaluation phase to further define the plan for the modification. Emerson personnel work with the facility staff (supervisors, maintenance, and operations) to put the details of the plan into place. These details include:

- Procedures and techniques to be used.
- Scope of the modification.
- Schedule for the activities.
- Related site activities that are pre-requisites for the modifications.
- Related site activities and testing that may be required following the modifications.
- People to be involved, including their specific roles and responsibilities for the modification.
- Reference materials and related documentation.
- Escalation plans and contingency plans.

It is critical to the success of the modification plan to have the full support of the facility staff and to ensure that everyone affected is aware of their role to play and how the modification will affect them.

Modification Execution: Completion of the planning phase is required for commencement of the modification. Emerson personnel will be on-site to perform SIS modifications, and any remote Emerson support personnel are aware of their support roles. Execution is complete once the modification plan has been fully satisfied, documented, and the system has been re-registered.

Ordering Information

Description	Model Number
SIS Modification Services	Please consult your local Emerson office for availability

To learn how comprehensive Lifecycle Services solutions address your process management needs, contact your local Emerson sales office or representative, or visit **www.emerson.com**.

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