



Safety Instrumented Systems (SIS) Engineering Services

Advanced functional safety solutions for industry

Critical decisions made after the PHA/LOPA and before detailed design have significant impacts later in the lifecycle; aeSolutions can reduce your financial risk of late discoveries on capital projects.

aeSolutions has a unique process to design and implement ISA84/IEC 61511-compliant safety instrumented systems. We integrate intimate knowledge and experience in PHA/LOPA along with control system hardware and field instrumentation to ensure that Safety Instrumented Functions (SIFs) are clearly defined. We call this process SIS Front-End Loading (SIS FEL).

The True Value of an Integrated Approach to SIS

aeSolutions works with clients in all aspects of the process safety lifecycle. We understand that critical decisions made in the analysis phase have significant impacts later in the lifecycle, and we will help you reduce the financial risk of late discoveries on your capital projects. Our full understanding of the process safety lifecycle prevents rework, saves time, and produces a more effective safety program, resulting in an overall cost savings to you.

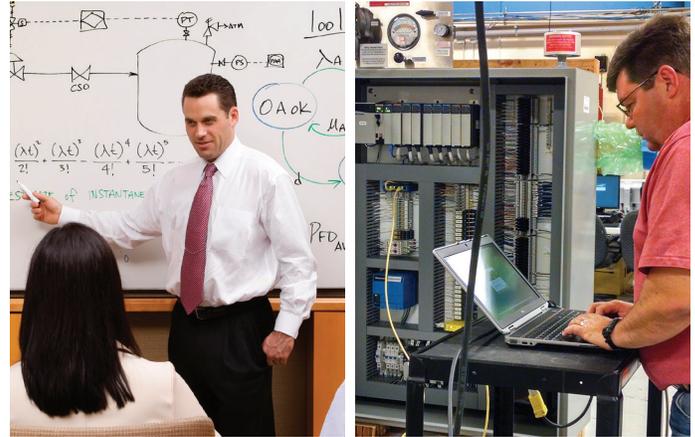
aeSolutions' integrated SIS approach:

- Ensures IPL verification and selection is well defined to minimize rework
- Demonstrates that your designs comply with ISA84/IEC 61511 from the beginning
- Optimizes capital costs against proof test frequencies
- Ensures the optimization of process safety and runtime reliability

aeSolutions SIS FEL Services

The engineering activities and deliverables in our SIS FEL process span the IEC 61511 Process Safety Lifecycle:

- Corporate SIS Project Standards Development
- Functional Safety Management Planning (FSMP)
- Functional Safety Assessment (FSA) Facilitation
- DCS/SIS Segregation and Independence Assessment
- Independent Protection Layer (IPL) Validation of Credits



aeSolutions experts are involved from conceptual design through fabrication, testing, installation, and startup.

- Safety Integrity Level (SIL) Verification
- SIF Architecture Options Analysis (Redundancy, Diagnostics, Hardware Selection and Test Intervals)
- Fault Tree Analysis/Quantitative Risk Analysis for Complex Hazard Scenarios
- Safety Requirements Specification (SRS)
- Application Program Requirement Specification Development
- Online/Offline Proof Test Philosophy & Design
- Factory Acceptance Test (FAT) & Site Acceptance Test (SAT) Plan Development
- SIS/SIF Equipment Specifications
- Process Safety Time Calculations

Putting Our Experience to Work for You

aeSolutions' process safety experience is hard to match. With our 20 P.E.s, 16 CFSEs, and 4 CFSPs, your project will be staffed and supervised with the best of the best in industry. Your Process Safety solution will be developed with the instrumentation and controls experience and compliance knowledge necessary for a successful startup and operation. aeSolutions will define, design, and document the safety functions to meet your safety and online reliability requirements for IEC 61511 and regulatory compliance.

Industries served:

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|-----------------|----------------------|
| • Automotive | • Pharmaceuticals |
| • Chemical | • Power |
| • Oil & Gas | • Pulp & Paper |
| • Petrochemical | • Specialty Chemical |

Our SIS FEL design process will pave the way to your successful implementation of process risk reduction.