

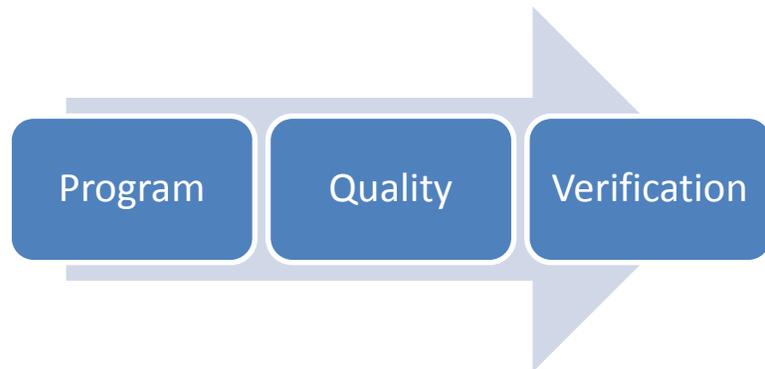
KENEXIS

Functional Safety Assessment and Certification Services



Ensuring Standards Compliance and Adherence to Design Best Practices through Expert Assessment and Certification

Functional Safety Assessment and Certification by independent and expert third parties has been effectively utilized by industry as a tool for ensuring that the safety instrumented systems are designed in compliance with the IEC 61511 standard and best practices of peer companies. Kenexis is uniquely qualified to assist organizations in the process industry to perform this task.



Kenexis performs assessments using its best-in-class *IEC61511 Safety Case Toolkit™*. The toolkit is a database engine that contains both the text of the requirements, directly from the standard, along with Kenexis explanations of the requirements and common methods by which the requirements are achieved in industry. In addition to the listing of the requirements, the toolkit contains a worksheet for each requirement that allows auditing using the regulatory agency approved PQV (i.e., Program, Quality, and Verification) style of auditing. The Kenexis toolkit employs this method by providing, for each requirement clause, a description of how conformance with the program is assessed, explanation of assessing the quality of the program in comparison with the text of the requirements and benchmarking against the practices of industrial peers, and methods for verification that the program is indeed being followed through data checks and interviews.

The **KENEXIS** Functional Safety Assessment and certification helps to ensure the appropriate safety instrumented system design

KENEXIS functional safety assessment and certification services are designed to meet the requirements of your project. Our services can be tailored to fit into any of the IEC 61511 defined project stages, and can also be done as a “spot-check” or a full certification of compliance

Project stages where functional safety assessment should be considered (as per IEC 61511)

✓Stage 1 – After the hazard and risk assessment has been carried out, the required protection layers have been identified and the safety requirements specifications have been developed

✓Stage 2 – After the safety instrumented system has been designed

✓Stage 3 – After the installation, pre-commissioning and final validation of the safety instrumented system has been completed and operation and maintenance procedures have been developed

✓Stage 4 – After gaining experience in operation and maintenance

✓Stage 5 – After modification and prior to decommissioning of a safety instrumented system

Number	Relevant	Requirement-Expectation	Findings	References	Gap	Quality
		method to insure circuit and power supply integrity. An excellent system will have redundant energy sources for all power. Each redundant source will be monitored to insure that it is at a level sufficient to achieve the safety function. There will be also redundant signal lines. A good system will monitor and alarm all power sources for all power. All signal lines will be monitored and alarmed for circuit integrity that could affect the ability of the system to perform its intended function. A procedure will be in place for corrective actions for all alarms. An adequate system will monitor and alarm all electric power. All signal lines will be monitored and alarmed for open circuits.		Designer Scarlett Ann Gray		
11.6.3	Yes	This clause requires that each field device shall have its own dedicated wiring to insure signal integrity. Exceptions are discrete sensors wired in series, multiple final elements wired to a single output or a digital bus system with sufficient safety performance. An excellent program will have dedicated wiring between the logic solver and sensors and final elements. A good system may have discrete sensors wired in series or more than one final element on a single channel, but will have documented calculations supporting that this configuration is adequate for the SIF. An adequate system may have discrete sensors wired in series or more than one final element on a single channel but will not be used for any SIF greater than SIL "A".	Each sensor and final element is wired to an independent input/output channel.	24. Visual inspection 12. Interview with Lead Designer Scarlett Ann Gray 26. Safety Integrated Function Software Safety Specification Rev. 0		Excellent
11.6.4	Yes	This clause requires that smart sensors be write protected to prevent modification from a remote location or that a review has been performed and remote modification has been deemed appropriate. An excellent program will either not allow smart	No sensors or final elements are configured for remote modification	12. Interview with Lead Designer Scarlett Ann Gray		Excellent



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