

# FUNCTIONAL SAFETY

HIGH QUALITY SOLUTIONS WITHOUT COMPROMISE

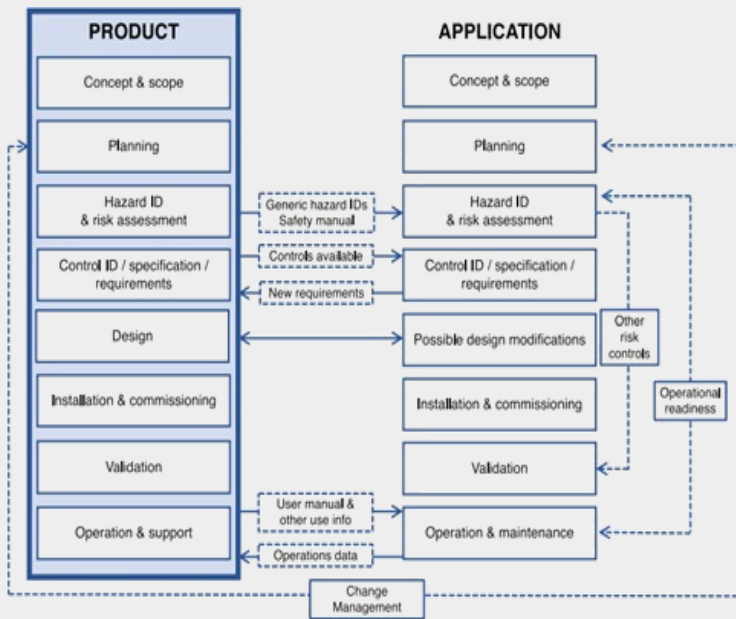
## WHAT IS FUNCTIONAL SAFETY ASSURANCE

SGC Australia’s Functional Safety Assurance is the process by which we ensure that safety related systems perform when required to maintain risk As Low As Reasonably Possible (ALARP).

The main and originating standard for functional safety is AS 61508, which applies to Electrical, Electronic and Programmable Electronic (E/E/PE) safety-related systems and covers a wide variety of industries.

These specific standards are aimed in particular at the process sector and system integrators.

Designers and integrators will usually adopt the standards that sit below this main standard, including AS IEC 61511 for the process industries and AS 4024 and ISO 13849 for Safety of machinery.



Example of the Relationship Between Product and Application Lifecycles (Abbreviations: Identification, ID)

## WHAT DOES FUNCTIONAL SAFETY ASSURANCE DO

Functional Safety Assurance covers the design and management requirements for a Safety Instrumented System (SIS) throughout the entire Safety Lifecycle (SLC) of the equipment or process. It ensures that all activities and documentation for a particular SLC phase have been completed as per requirements and helps to prevent systematic failures from being introduced.

Functional Safety Assurance scopes are developed in the earliest phase of a project, continuing through start-up and covering modifications over the life cycle of the equipment or process, maintaining activities until the equipment or process is eventually decommissioned.

The applied standard used in this Functional Safety Assurance system consists of:

- Framework and definitions for system hardware and software requirements
- Guidelines in the application of the specified standard
- Guidance for the determination of the required safety integrity levels
- Ensuring security of a system’s own safety by designing systems that prevent or control hazard and risk in the case of system failure
- Highlighting the potential of E/E/PE technology for improving both E/E/PE-related system design safety and economic performance
- Ensuring that technology development is achieved in the overall safety framework
- Providing a risk-based approach to determining the performance required for the applicable safety-related system

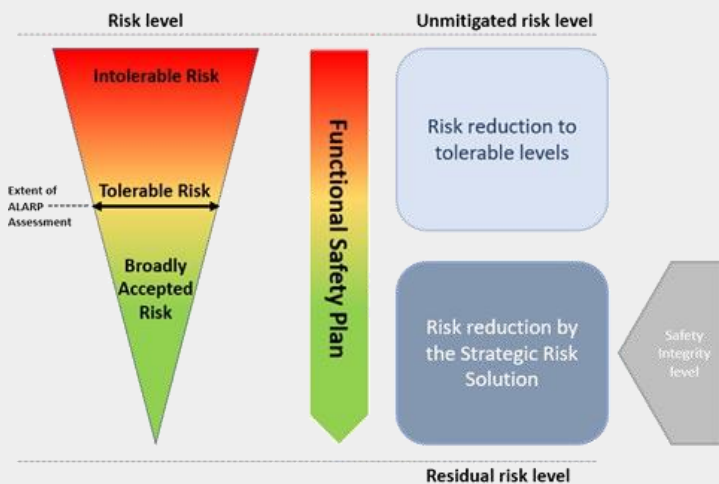
# FUNCTIONAL SAFETY ASSURANCE

## WHAT ARE THE BENEFITS OF CHOOSING SGC AUSTRALIA'S FUNCTIONAL SAFETY ASSURANCE

SGC Australia have a deep understanding of process standards and asset intensive operations.

We provide a systematic approach with a standardised process for designing, delivery and operating fit-for-purpose E/E/PE safety-related systems and their associated safety justifications.

SGC Australia's Functional Safety Assurance program comprises a multi-stage plan that is tailored to the specific needs of the client and implemented during design activities with minimal extra effort.



Reference: [http://www.cnbis.co.kr/en/consult/con01\\_2.php](http://www.cnbis.co.kr/en/consult/con01_2.php)

Image: Example of the Relationship Between Product and Application Lifecycles 20200709  
Guideline for Applying Functional Safety to Autonomous Systems GMG-AM-FS-v01-r01

## SGC AUSTRALIA'S FUNCTIONAL SAFETY ASSURANCE PLAN

During the initial stage of SGC Australia's Functional Safety Assurance plan development, the project concept scope is defined, and a risk assessment carried out to determine the required safety function, and level of risk reduction required for that safety function.

The resulting Safety Related System (SRS) will typically be presented as a safety requirements specification which details the functionality and risk reduction requirements, and maps that risk reduction to an equivalent Safety Integrity Level (SIL).

This process ensures that not only will the SRS reliably perform the required safety function, but it will also be suitably robust, rigorously designed and tolerant to faults, providing assurance of its correct function.

Once the SRS is completed, SGC Australia will develop the design of a reliable system, ensuring all requirements have been met and that functional safety activities have been undertaken correctly.

During this step, the design is critically reviewed and verified. A reliability analysis will be conducted to demonstrate that the required risk reduction has been achieved, with the validation process often undertaken by independent parties to ensure objective analysis.

The intent of this step is to audit the overall process to confirm that appropriate functional safety assurance tasks were planned for and undertaken when required by suitably competent people, to an appropriate standard and quality.

The requirements of functional safety do not end once the design is verified and validated. SGC Australia will install, test, maintain, monitor and manage the system so that it continues to perform as intended and that the assumptions and claims of the assurance process as a whole remain valid.