



LOPA, SIL and Functional Safety

Layer of Protection Analysis (LOPA) is an analytical tool to determine the adequacy of protection layers used to mitigate a process risk.

In comparison with HAZOP, which provides a qualitative view of risk, LOPA is a semi-quantitative approach which further analyses the barriers or protection layers. These are in place to prevent the occurrence of an event which could have detrimental safety, environment or commercial consequences.

The LOPA will identify the acceptable likelihood of occurrence associated with each event. It will then determine if the existing layers of protection are suitable to reduce the likelihood of the event to an acceptable level.

It may be necessary to introduce a Safety Instrumented Function (SIF) with an associated Safety Instrumented System (SIS) of appropriate Safety Integrity Level (SIL) to bring the risk to an acceptable level. This is generally termed Functional Safety (FS) and is carried out in accordance with the recognised standards BS EN 61508 and BS EN 61511. Multiple SIF/SIS loops may be required for the process, dependent on the activities under consideration.





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What we can offer:

With our in-house accredited engineers, we are able to offer the following services:

- Identification of tolerable and acceptable risk criteria including associated event frequencies.
- Undertake LOPA study, complete with recommendations for SIFs. We can provide a trained LOPA chairperson, scribe and supporting engineers, all with LOPA experience.
- Application of a recognised LOPA approach using our own documentation or the client's preferred format.
- SIL determination to identify the risk reduction required for each SIF.
- SIF/SIS design, including equipment specification to meet the appropriate SIL using TRAC software.
- Provide a FS manager to ensure the FS lifecycle is followed from conception to commissioning.
- FS documentation including SRS and URS.
- Third party validation of SIFs.
- TProcurement, installation and commissioning of FS systems.



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