The Risk of LOPA and SIL Classification
How safety standards can be counterproductive

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Risk evaluation techniques are increasingly used in the process industry. This is mainly due to the ongoing widespread implementation of the international IEC 61511 standard. This standard requires a risk based approach. The term used for that is SIL classification, which is in fact is a risk analysis. The risk of Loss of Containment scenario’s (HAZOP identified) need to be determined and the required Risk Reduction Factor (if any) results from comparing with a company determined risk acceptability criterion. Proper implementation of a Safety Measure (Instrumentation, mechanical or otherwise) which can fulfill the (SIL) requirements should than lead to a design which is safe enough (risk below an acceptable level).

If applied correctly, taking into account the complexity of safety, this method gives a valuable framework for an industry consistent, verifiable approach. However, this is not always the case.

In this paper we will present different aspects of the risk evaluation/ SIL classification approach which will not contribute to the supposed risk reduction. Examples are given from a large practical experience with the performance of SIL Classification in the process industry. These aspects include:

- The improper use of the SIL approach to justify the risk of inherent unsafe situations (e.g. venting to non safe locations)
- The incorrect credits for risk reduction given to human/ operator interference
- The use of generic, non verifiable risk reduction factors for safety provisions in LOPA.
- Large differences between SIL Classification practices with LOPA and with other methods like Risk Graph and Risk matrix.
- The lack of proper implementation of the Safety measures in a Safety management System.

1 Safety Solutions Consultants BV (TNO SSC until 1/2/2008) gives advise to the (process) industry about all aspects of safety. These imply aspects in relation to design, construction and operation of processes installations. SSC is based in The Netherlands.