Consistency in SIL and PL Justification

Why Third Party Certification Makes Sense for Manufacturers

Perhaps motivated by tough economic conditions, some manufacturers are choosing self-declaration as a means of establishing Safety Integrity Levels (SIL) or Performance Levels (PL) for their components aspiring to meet specific IEC and ISO functional safety standards. This may be a classic case of "penny wise, pound foolish."

The probabilistic part of a Functional Safety assessment is not an exact science, and if the justification process is determined by a party who is, ipso facto, interested and not disinterested, it is understandable that end users may have some doubt about the actual level of risk reduction of SIL and PL ratings, regardless of the reputation of the manufacturer involved.

The fact is that probabilistic SIL and PL verification data can be derived from any number of standard sources, but how an entity chooses to use that data will be conservative or moderate or liberal in application.

When verifying the level of risk reduction that is provided by the safety-related system, using data consistently and making conservative decisions along the way can lead to much better risk reduction than quantitatively selecting numbers that don't necessarily match up with the systematic measures that also need to be in place for confident assessment of safety factors.

As an example, being consistent and conservative in the application of data could mean that it should not be the second digit behind the decimal point of an MTTFd value, which could be changed by slightly reducing the expected number of operations per year, that is the reason for eliminating a detection function or decreasing the hardware fault tolerance.

The best way to ensure a consistent and conservative approach to SIL and PL justification? Engage a third party to certify the component to the specific IEC or ISO standard.

Third Party Value

When a manufacturer engages a third party to justify the SIL or PL for its component, it is moving to establish consistency and an objective, conservative approach that carries more weight than can be achieved via self-declaration.

While it is possible to play with reliability numbers to try to demonstrate safety-related failure rates and maybe even justify a SIL or PL (SIL levels rise on an order of magnitude; SIL 3 integrity being an order higher than SIL 2; SIL 2 than SIL 1...), bringing in a third party will assure that not only will the probabilistic aspects of the SIL be examined, but also the specific method that went into selecting those numbers to assure that there is an adequate level of conservatism practiced. Further, the third party will look at the systematic issues that are addressed as part of SIL justification. An exhaustive assessment determines the SIL Capability by analyzing the complete component design process including specification methods, design methods, design tools, testing methods, review procedures and documentation.

This is where third party certification can be much more beneficial to an industry (or buyer, or manufacturer, or worker) than a manufacturer's self-declaration or claims that they meet a SIL or PL: in the assurance that the complete safety concept is considered.

Why UL

Consolidating product testing and certification at one global organization creates significant efficiencies that can deliver greater return on functional safety compliance investment. This certainly holds true for SIL and PL justification.

Discover how UL can help you justify SIL and PL more dependably and effectively, helping your products establish strong market acceptance.
Contact Kevin Connelly at UL now:
T:: 631.546.2691
E:: kevin.connelly@us.ul.com

www.ul.com/functionalsafety