What Else is Needed Besides a SIL Evaluation?

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ABSTRACT

The concept of the Safety Instrumented Function (SIF) associated with a Safety Instrumented System (SIS) is that the instrumentation will provide an interlock actuation, relief of pressure action, or some other function to prevent the process from becoming unstable or dangerous, or that it will provide an alarm so that compensatory actions may be taken prior to the process reaching a Safety Limit. A Safety Integrity Level (SIL) evaluation performed in accordance with ANSI/ISA-84.00.01 and/or IEC 61511 determines how reliable the SIS will be and assures the user that the SIS will take action when commanded to do so. However, there is another element beyond the regulatory requirements of these standards that must be considered. This element is the uncertainty associated with the SIS and whether the SIF will occur at the desired process value. Does the SIS respond at the correct process conditions or with sufficient time to perform the required SIF? Uncertainty is inherent in the instrumentation, in its operation, in its application, in its environment, and in the effects imposed by the process itself. This paper will address the performance characteristics of the SIS equipment and their impact on the ability of the SIS to perform its designated SIF before the process approaches the Safety Limit.