Benefits of Simple Consequence Modeling for Burner Management Systems

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The current approach used to analyze fired heaters during a Process Hazard Analysis (PHA) is inefficient and outdated. Fired heaters can be one of the more complex systems evaluated in a PHA, however they certainly aren’t anything new. In fact, they are one of the most common pieces of process equipment throughout industry, and have been for quite some time. Why then is such a large amount of PHA team time still needed to analyze them? Why when using the same Process Safety Information (PSI), and the methodology and risk criteria remain the same, can the results still be inconsistent? The obvious answer is the PHA team; different teams yield different results. Since the results of a PHA drive the Safety Integrity Level (SIL) for the heater’s Burner Management System (BMS), inconsistencies between analyses can have significant safety and financial impacts. If the consequence estimation is over conservative the selected SIL may be too high, which will result in an over designed and a very costly Safety Instrumented System (SIS). Conversely, if the consequence estimation is too low the facility’s risks may not be adequately reduced by the selected SIS. Therefore a means to efficiently and consistently determine the consequence is critical. This paper will describe how simple consequence modeling can solve this problem, its inherent benefits, and the cost savings it provides.

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