New Paradigms in Mitigating Unplanned Events Caused by Human Error

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Abstract

Statistics from several industry and government sources indicate that the OSHA PSM process safety incident frequency has dropped dramatically. However, the improvement trend seems to have plateaued.

It has also been noted that operator error was identified as either the primary or secondary root cause in over 80% of these events.

Much has been accomplished by employing computer systems, behavioral policies, and compliance actions in various stages of implementation. However, the desired results are not being achieved. The asymptote in performance could be due to uncoordinated technology implementation and policy enforcement which are not synergistic in achieving the overall goal. It is hypothesized that the next paradigm in process safety and human productivity will require an integrated approach to man-machine-method solutions.

Failure to follow established standard operating procedures continues to be the single most repeated cause for human failure. Academic research points the finger at the cognitive decision-making disconnect between executing the written procedure manually and the level of automation applied to the process.

It is proposed that computer augmentation of written procedures, mobile-enabled with real-time links to a process control system, is a missing capability which could error-proof manually executed tasks. Pilot attempts using this technique have been deployed but have been limited to proprietary, custom solutions.

This paper will explore advances in platform-neutral computer technology, including breakthroughs such as augmented reality, which could provide cost-effective alternatives to the traditional hardwired approach of deterministic automation solutions to reduce human factor errors.