

Alarm management: Stop designing for failure

By Eddie Habibi and Bill Hollifield

"All accidents are preventable." This is a powerful statement that inspires professional men and women in their quest for a safer working environment. We believe it to be true because otherwise we would have to accept failure. And when it comes to human life, failure is not an acceptable option.

But is it true? Reality seems at odds with our belief.

Research by the Abnormal Situation Consortium and the U.S. National Institute of Science and Technology indicates more than 42% of all industrial accidents are the result of human error. The remaining 58% comes from process and equipment failures. Most of us hardly ever question such authoritative statistics.

But consider this remaining 58%. Why does a process fail? Why does equipment fail? These failures themselves have root causes. People design, maintain, and operate all processes and equipment, with the intention they function properly. Yet failures occur, and they actually relate to human error as well.

Root cause

When we do not want to blame human error, the usual culprits are design flaws, maintenance, and acts of God. The failure to properly design and maintain is a human failure. Things do not design or maintain themselves.

The tough one, acts of God, can usually trace back to human failure as well. For every event blamed as an act of God, you have a failure of humans to plan and design for that event. At one time, acci-

dents caused by lightning strikes were literally acts of God. Now, we understand proper grounding technologies to compensate for lightning. A lightning strike should not explode a chemical plant. Similarly, we design and maintain for safe containment during hurricanes. We do not intentionally design for failure. (We may choose, for economic reasons, to not design for asteroid strikes.)

Failure to design for a reasonably expected occurrence is thus a human failure and a human error as well. And given this, human error is thus the sole root cause of all industrial accidents. With sufficient care, human error is avoidable. We conclude that all accidents are indeed preventable.

Alarm management is a high-profile, further example of this situation. Over and over, reports point to improperly implemented and overloaded alarm systems as contributing factors to operator error, accidents, and even tragedies costing human lives, billions of dollars, and public credibility.

Alarm systems have never been "designed" at all—and certainly not in accordance with the principles of good alarm management. The thing is, these days everyone knows the principles, and failure to adopt them is now an explicit decision—a decision for failure. We no longer paint our houses with lead-based paint because now we know better.

Parts of our industry are still struggling with how to "justify" alarm management improvement projects. Maybe a better question to ask is "Where is the justification to continue operating alarm systems that

actively hinder and distract the operator during normal and abnormal situations?"

The failure to design a system properly is the same as designing for failure.

The good news is alarm management is now a well defined field with clearly established improvement methods, software tools, and hundreds of successful projects. A number of industry leaders have wised up and made alarm management a mandatory initiative at every site, considering it a "license to operate" business imperative.

We do not mean to imply that solving the alarm management problem alone will eradicate all operator errors or process accidents. We do, however, believe doing so will greatly improve the odds that an operator under pressure can take the correct actions. The need is to stop an emerging abnormal situation from leading to a catastrophic accident.

And we continue to believe all accidents are preventable, but only to the extent that we are willing to take action to prevent them—because the alternative remains just unacceptable.



ABOUT THE AUTHORS

Eddie Habibi is the founder and chief executive of Houston-based PAS. **Bill Hollifield** is PAS's principal consultant responsible for Alarm Management. Their book is *Alarm Management: Seven Effective Methods for Optimum Performance*, ISA, 2007. Their e-mails are Eddie@PAS.com and BHollifield@PAS.com.

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