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Taking the Common Sense Approach

You can't teach someone common sense, or can you? The principles of inherent safety, first formalized by Trevor Kletz quite some years ago, are purely based on common sense. There are four key principles — minimize (use smaller quantities of hazardous materials), substitute (replace hazardous substances with less hazardous ones), moderate (use hazardous materials in their least hazardous forms) and simplify (design processes to eliminate opportunities for errors). Application of these principles to any system design logically leads to a wide range of positive benefits, such as improved worker and public safety, reduced liability, and possibly even lower safety costs. Yet, these principles are not as popularly applied as engineered/add-on or procedural/administrative measures, points out Paul Amyotte, Faisal Khan and Ashok Dastidar in the cover story "Reduce Dust Explosions the Inherently Safer Way" (pp. 36–43).

Part of the challenge is educating people on these principles and how to apply them, which brings me back to my original question, can you teach someone common sense? Chances are, you can't teach someone common sense, but you can make them more aware of inherently safer options. That's why this month's cover story is an important read to everyone. Although it specifically applies to dust explosions, the principles behind inherent safety are discussed. Also, the article gives several real-world examples on how inherent safety principles are, or can be, applied.

Another common-sense approach covered in this issue is process intensification, which is the equivalent of the "minimize" principle. It typically refers to technologies that replace expensive, energy-intensive processes with ones that are less costly and more efficient, or that combine multiple operations into fewer devices (*e.g.*, microreactors, reactive distillation, etc.). In the article "Process Intensification — Has Its Time Finally Come?," (pp. 50–55) Joseph Porcelli and Costas Tsouris discuss the current applications of process intensification, and more importantly, identify the barriers it needs to overcome before it can gain widespread acceptance in the engineering community.

Acceptance will take some time, as Porcelli and Tsouris note that "...few of the process intensification technologies developed to date offer a clear economic incentive to justify implementation, whether for a new plant or a retrofit." However, the concept of process intensification makes sense, and it's just a matter of time before engineers develop technologies that are less energy intensive, more efficient and economically sound.

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