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## Rethink Everything

**R**ethink everything. No exceptions." This is the mantra that I have recently adopted with my clients and seminar attendees. For those who are adept at using electronic sensors within their tooling and value-added operations, this call to revisit all activities is much more easily achieved than for those who have little if any mistake-proofing sensors embedded throughout their processes. For most metalformers, part volumes are a shadow of what they once were. Armed with sensor expertise, the best companies are literally combing through every facet of their operations in search of more efficient manufacturing methods to cope with lower-volume orders.

Downsizing employee counts and lean manufacturing are not enough. One needs to go deeper into the dies and assembly processes themselves and question all physical assumptions about the actual tooling and machinery. Hold back nothing. No sacred cows, especially when it comes to tooling. You and I have seen these past two decades usher in extremely efficient and innovative tooling designs driven by high-volume orders. Electronic sensors were primarily used in these dies to patrol the repeatability of the mass-production process. Many times, the dies were designed and the sensors put in place afterwards to monitor the process.

In the new thinking, sensors become the drivers for the design process. Where a complex one-station mechanism was the way to go for higher volumes, now perhaps a two-step process that is much lower in cost is the way to go. Our designer warns us that this latter approach may have a drawback as there may be a greater chance of mechanical failure within the two steps. This is

where the sensors come in. If the rethinking process can save us thousands of dollars in tooling components then it would be wise to incorporate the electronic sensors at the design stage to re-engineer the designer's thinking and turn it into a reality. The electronic sensors are, for the most part, very inexpensive. The real challenge is to get the tooling designer to work comfortably and in real time with your company's sensor-applications expert so that the lower cost approach to the tooling becomes realistic.

The same applies to any value-added processes that follow the metalforming operations. Revisit your assembly areas to see if the next generation of a similar process could not be simplified further and at a lower cost than the current mechanisms. Many value-added operations were designed in years past and optimized over time to handle large volumes of assembled parts. With many of those volumes dropping precipitously, it would be wise to assume that perhaps the over-engineered high-volume concerns of the past may no longer apply to current part volumes. This rethinking too must be done hand-in-hand with your company's sensor-applications expert.

All next-generation assembly machines, for example, may have to be brought in line with the lower volume expectations and, consequently, what worked and was justifiable in the world of high volumes for value-added may not at all be realistic and profitable to maintain in the world of diminished orders.

"So what's the big deal?" you may ask. Plenty, for in a world of thoroughbred race horses bred to perform in idealized race track conditions with

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their attendant trainers, jockeys, investors and owners, it is extremely difficult to talk about mules. It is the same with tooling and assembly-machine design. In a world of seemingly never-ending high-volume orders for automotive, appliance, hardware, electrical, medical and aerospace parts, a certain type of group think evolved within our engineering, design and automation experts. It was good and perfect for its time. But now, with lower-volume orders, it is paramount that all engineering functions be brought into the new reality.

Lower volumes actually mean more

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uses for electronic sensors as the rethought mechanisms of the high-volume era are redesigned to better conform to shorter-run scenarios. Your company's management must take this very seriously. Lower-volume orders actually require more sensor use than most in management realize as the simplified tooling and near-zero inventories of short runs simply cannot tolerate mechanical failures or human errors in setups and production runs. Where an order for a million pieces has some financial cushion for mistakes, even within good lean practices an order for 1250 parts simply has very little room for errors of any kind.

Rethink it all. I will be available in person, at booth 17109 at METALFORM, November 15-18 at McCormick Place in Chicago, to visit with anyone who may want to discuss the above or any other mistake-proofing issues. **MF**



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