

## *Doing Safety the “Right Way” Lifts Productivity Too*

Are safety and productivity incompatible? If safety is an afterthought, absolutely, but safety measures that are worked into the very design of manufacturing plant actually boost productivity, says Pilz managing director Frank Schrever.

In fact, Mr Schrever says, the best safety systems make work easier (and lines more efficient) at every stage from project planning through to operation and maintenance. Otherwise, he warns, the safety system risks being bypassed.

"Behaviour based safety (BBS) proponents cite a DuPont study suggesting that up to 96% of incidents are caused by unsafe acts," he says. "On the other hand, Australian statistics suggest that more than 90% of fatalities and injuries involving machinery and fixed plant are due, at least in part, to design. How can both be true?"



**The best safeguards can even enhance productivity and remove the motive for illegal bypass.**

Mr Schrever believes both design and behaviour play a role in OHS.

"Just as nobody wants to get hurt, nobody is perfect either," he says. "Unfortunately, many administrative controls are time consuming and, when the pressure is on, are the first safety measures to be short-circuited. Injuries often occur when someone with the best intentions thinks they'll just quickly fix a hiccup on the line without needing to shut down the machinery.

"Why? Because they feel that following the correct safety procedure will slow things down and productivity will suffer – so the only way to make things really safe is to combine maximum safety with maximum efficiency.

"It is possible. When safety is part of the design, it doesn't compromise production or ease of use, like guarding slapped on as an afterthought sometimes does."

Mr Schrever points to controls integrated into the operation of the production line, like programmable safety technology, as the answer.

"Using Programmable Safety Systems with dedicated safe field bus and/or software configurable safety relays like the PNOZ Multi, engineers can automate safety, so that the line watches out for the operators, provides fast access when needed, and clear diagnostics so that downtime is minimised."

Keeping safety in step with changes to manufacturing lines is also streamlined. Rather than hard wiring inputs and outputs, such digital technology allows plant engineers to design safety systems with drag and drop icon-based software, making configuration and alterations swift and low cost. Replicating the system is also simplified, as the configuration can be copied from one controller to the next.

The best safety systems, Mr Schrever says, also accommodate circumstances where guards must be legitimately bypassed when plant must continue to run while adjustments are made. Normally, safety gates offering access to these areas trigger a shut down of the matching zone

as soon as they are opened. When these need to be suspended (not simply bypassed as so often happens if the design has not catered for these circumstances) so that workers can interact with the machine in operation, a second tier of safeguards is vital.

Working on the safe suspension of safety gate operation, the system logic involves five steps:

1. Choose operation mode: maintenance
2. Plug in a maintenance safety device at the segment or door you want to open. This device must over-ride the standard controls and be part of the appropriate safety control system.
3. Open the door at the plugged segment
4. Use the maintenance safety device to run the machine (safe slow, limited inch, jog etc, are common safe run modes for this application)
5. If a door opens in another safety segment, the machine must stop since the maintenance person, who is operating safely, could now unwittingly injure another person who is unobserved and unprotected.

There are two broad categories of 'maintenance safety devices': those that constrain the user and those that constrain the machine.

The first group aim to keep the worker from the hazard by only operating when the user's hands are placed on the controls, such as two-hand controls and hold to run or 'dead man' switches. The second group make the hazard more readily avoidable and include safe speed controls and inching timers.

Logic-based controllers, like the PNOZmulti, again simplify the process, as operators key the requirements into speed monitoring modules and allow the software to make the computations. Each PNOZmulti can oversee the safe standstill and/or speed of up to eight drives.

The PNOZmulti is just one component of a growing family of programmable safety devices. For engineers, the benefits are less wiring and installation work for fast, economical commissioning; troubleshooting and fault evaluation right down to I/O level; and maximum plant availability. For employers and employees alike, the outcome is a safer and more productive workplace.

For more information:

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