

New Press Controls

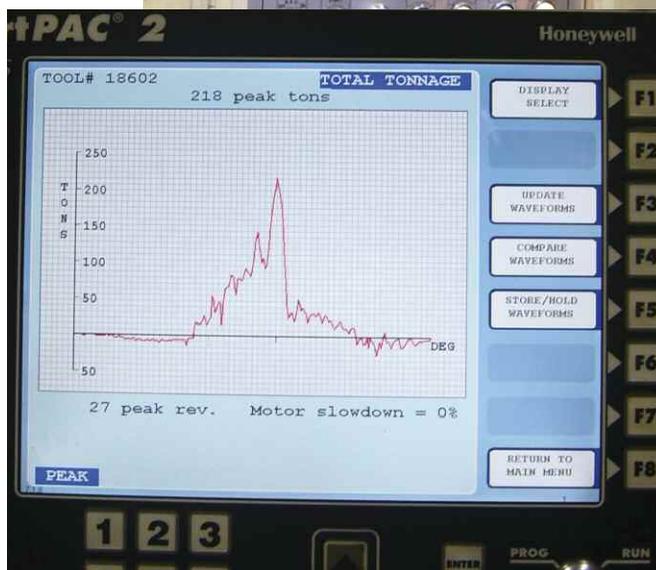
Push Press Uptime Higher, PPMs Lower

An investment in state-of-the-art press-automation controls delivers a boost in uptime and a significant drop in internal PPM, and frees up the toolroom to focus on sensor installations rather than emergency die repairs.

BY BRAD F. KUVIN, EDITOR

Henry Ford once said that if you need a machine and don't buy it, then you ultimately will find that you have paid for it, but don't have it. In the metalforming and fabricating arena, Ford's perspective easily applies to press controls, where significant technology advances have continued in spite of the economic climate. State-of-the-art controls offer increased ability to handle greater numbers of sensor inputs, and boast a host of new gee-whiz features. Now it's up to metalformers to learn how to make use of such features to collect and convey press-line data over wireless networks, and to direct and optimize the functions of all of the equipment in a press line, including servo feeds and automated end-of-line packaging systems.

Those that attempt to handle complex projects with large, sophisticated and complex dies while using the control technology of yesterday soon come to realize how astute Henry Ford's comment was. Bottom line: Metalformers need to upgrade to newer press controls, or run the risk of "pay-



A transfer-press operator takes a look at the tonnage monitor's plan view on the SmartPac2 to check peak tonnage at each corner of the press for each stroke. The tonnage monitor also provides tonnage history, tracking load throughout the stroke (left) and comparing it to the maximum tonnage curve of the press.

ing for it” by losing vital control over what has become a growing list of process variables. This loss of control can cause unscheduled downtime in the pressroom and wreak havoc on part quality.

Seeing the Handwriting on the Wall

One metalforming company that saw the handwriting on the wall and realized that a press-automation control upgrade not only would easily provide a quick return on investment but also prepare it for future growth and prosperity, is appliance-industry supplier nth/works. The Louisville, KY stamper, which also supplies the automotive, electronics and HVAC markets, undertook an intensive program late in 2007 to upgrade the controls on all 36 of its mechanical presses.

“Tool complexity really took off on us,” says nth/works’ sensor-applications specialist Jason Chanda, “to handle rapidly increasing aesthetic requirements from our customers.” Doug Hogan, director of sales and marketing, adds, “More often, we’ve been quoting jobs with drawn features whose dimensions stretch along several different forms, which are very challenging to check and verify. As we take on more of this type of work, we’re required to take our in-die sensing to a whole new level.”

The firm operates presses from 75- to 1100-ton capacity; bed size reaches 240 in. on a couple of transfer presses and some dies contain nearly 50 sensors. For sure, state-of-the-art press controls would be needed on its presses as nth/works continued to take on these types of complex dies. But the need for additional sensor inputs represents just one cost justification for the level of investment needed to upgrade three dozen presses.

“From an executive level, we discussed a handful of items that convinced us, back in 2007, to commit to attaining the highest level of press-automation control technology available,” says Hogan. “Escalating die complexity,



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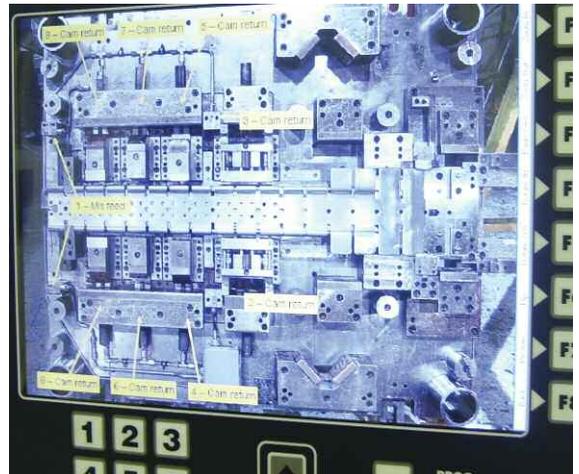
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New Press Controls

with more motion occurring in the dies, more cam forms and pierces, in-die tapping, etc., required us to upgrade our sensing program to ensure that we captured all of those variables.

“We also did a quick study to determine the average cost of a die crash,” continues Hogan, “and to look at cost justifying an upgrade to our press controls from that perspective. Our focus there was not as much on those crashes that cause catastrophic damage, which are few and far between, but rather on the production disruptions that may go unreported and unnoticed by management. These events individually don’t create big losses, but collectively add up to big losses in efficiency that ultimately cost the company plenty.”



An Info Center option for the controls allows press operators to download setup sheets, drawings and detailed photos of complex dies.

Uptime Up, PPMs Down

Since beginning its control-upgrade journey late in 2007, nth/works has outfitted half of its presses with new controls (SmartPac 2 units from Wintriss Controls), and results are impressive. Plant manager Rodney Shehorn explains.

“Our press uptime and efficiency has improved measurably since we’ve installed the new press controls,” Shehorn says. “And, more importantly, any variation in uptime has vanished; we have little or no unplanned downtime. In the past we might run at a high level of efficiency one shift, and then see a significant drop the next shift. Now our pressroom runs at a consistent level, shift after shift, day after day.”

“Internal PPM has dropped as well,” continues Shehorn, “a function of improved first-piece setups. We have dramatically

reduced the potential for defective parts at first piece due to an out-of-control process variable. We capture more variables with the new controls and obtain dependable setups with the first try. We’re running more closely to the run rates we quote, thanks to fewer interruptions, so our quotes are more accurate.

“Lastly,” adds Shehorn, “our tool-maintenance time and related costs now are being put toward more sensor installations as we look to retrofit existing dies and build more sophisticated new dies, rather than emergency die repairs—a much better use of our toolroom. We’d



New press controls allow nth/works to continue to focus on increasingly complex parts and dies, such as the tool shown here that boasts 16 sensors.

much prefer to direct labor toward improving our automation and continuous-improvement efforts than on fixing prematurely broken tools.”

Where to Begin

nth/works began its control-upgrade journey by focusing on its three busiest presses, 150- and 200-ton models that together account for 70-plus tools. These first-in-line presses for control upgrades run the largest variety of tools that form higher-volume parts—2 billion parts/yr. in some cases. Many are multiple-part-out dies running at 100 strokes/min. or more. Most of the firm’s presses already took direction from previous Wintriss controls, which simplified the upgrade process, says Chanda. The controls use the same connections, and the existing ProCam electronic cam switches easily tied in as well.

“The SmartPac 2 control does give us added capability to controlling our ProCam switches,” says Chanda. While the previous controls (DiePro 1500 units installed on the firm’s presses in the early 1990s) can fire the ProCam switches after a set press-stroke angle or at a certain angle, the SmartPac 2 provides added options, such as activating the ProCam based on counter readings.”

Other newly gained functionality with the controls include wireless networking so that all job settings are backed up to a network drive. The firm connected wireless adapters to the built-in Ethernet ports, and down the road, it expects to integrate data gathered at the presses into its OEE (overall equipment effectiveness) calculations. It also plans to integrate the network with its ERP system.

The SmartPac2 also features a web interface that allows managers to view press status remotely, and which allow Shehorn and others to view the error log for each control. The firm also added the Wintriss Info Center option to every one of its new controls, which allows the controls to display setup sheets, drawings, photographs and other information. “One of the best applications of this feature,” says Chanda, “is providing quick access to photos and drawings of

our more complex die sets, labeled with sensor and other feature locations. These roadmaps help the operators troubleshoot the tools and, since they can pull the illustrations off of the network, it cuts down on the amount of paper on the shop floor.”

Another feature of note is the Servo-feed Interface (SFI) that integrates the controls with nth/works’ feed controls, “which gives our operators one less

process variable to worry about,” says Shehorn. The SFI automatically sets feed length and speed when a new job is loaded. Included with the SFI is Feed Advisor software that optimizes feed parameters. Says Shehorn: “We used Feed Advisor on several of our existing setups, and in a few cases we found we could reduce the feed rate and acceleration, reducing wear on the feed and improving accuracy.” **MF**

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