

Is Your Press Line Out of Control?

As stampers add components to press lines, controlling all of them can become quite a chore, testing the ability to maintain part production and conduct proper troubleshooting. That's when a controls assessment and upgrade are in order.

BY LOUIS A. KREN, SENIOR EDITOR

A press line begins with a press. You might add a decoiler, straightener and all manner of ancillary equipment. With each addition, you're hopefully boosting productivity and tailoring the line to meet your ever-changing needs; but you also may be getting a controls nightmare. With each component addition, the controls equation on a press line gets a bit more complicated, unless controls were specified originally that could expand seamlessly with line additions.

Of course, addressing controls expansion upon acquisition of a press doesn't always occur, and the variety of line equipment added over the years may not be completely compatible with the existing control network. In these cases,



Control upgrades not only result in cleaner cabinets and reduced wiring (top photo is a control cabinet prior to cleanup, bottom photo is after), but also brings a host of important benefits. Open architecture in control hardware provides flexibility to handle new jobs and the addition of equipment. When selecting equipment to add to a press line, look for compatibility to the existing control system, but that need not be the overriding factor as equipment can be rewired to properly mesh with the rest of the line. As one controls supplier says, "If the equipment is in good shape mechanically, you can make it work electrically."

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a workable solution may be found inhouse that gets the line running. But productivity and efficiency may suffer. The press may run slower, faults may stop the line all too frequently and proper troubleshooting may be sacrificed.

A Control Cleanup is in Order

At some point on critical press lines—what press line isn't critical?—control issues must be addressed, and a

control cleanup is in order. That's the message from Toledo Integrated Systems, Inc., Holland, OH, which provides controls and control-integration services to the metalforming industry. Company officials discussed with *MetalForming* the need for controls consistency across a press line and how that can be accomplished.

"In many cases, we'll get a call from a stamper claiming that its process or



A controls cleanup can address press-line problems caused by the addition of equipment to the line over time without planning for consistent and adequate control of that equipment. A cleanup can ease troubleshooting (with a fault log and fault descriptions easily available via the control panel or remotely), leading to increased uptime, and ease line expansion the next time around.

certain control component is obsolete, and repairing it in the past required a long wait on older-style and expensive parts," says John Eby, controls product manager. "The stamper also may want to place the equipment on the company computer network to monitor downtime, but the current setup does not enable that."

To rectify such unfortunate situations, the next step involves assessing the current state of the line to determine a plan of action.

"We provide a questionnaire that addresses a number of press-line issues," says Dan Falcone, Toledo Integrated's sales and marketing manager. "Maybe, for example, the line's clutch-brake controls are out of date, so we ask for details on that."

The questionnaire also assesses incoming line voltage, press main motors, shut-height adjustment, the press-lubrication system and other line equipment such as hydraulic overloads, feeders, transfer systems, robots, etc.,

and addresses future planning, too.

"Perhaps a stamper will need a specified number of die-protection inputs and different outputs to control certain processes," Falcone says. "Stampers may not need them right now but will in the future, and it is important to allow for expansion on automated lines."

Placing Line Components on the Same Page

Cleaning up press-line controls and integrating ancillary equipment comprise a sizable portion of work for Toledo Integrated Systems.

"The metalforming industry has moved more toward encompassing monitor and control functions into one system, which has been a tremendous growth segment for us," offers Falcone.

One recent Toledo Integrated Systems project addressed line integration and control cleanup at an automotive Tier One stamper in Ohio, which over the years added a decoiling unit and feeder to a mechanical press.

"The line employed two controls that each required different software to program," says Eby. "They could communicate with each other but not very smoothly. The customer asked us to place the controls on the same platform. In addition, equipment drives had faulted intermittently, which inhibited production. All of this affected the ability to troubleshoot."

Manage By Facts Instead of By Opinions

A controls upgrade can assist troubleshooting by pinpointing the cause of press stoppage, according to Dave Buehler, Toledo Integrated's controls manager. "This directs the operator or maintenance personnel to the problem, and a fault log, usually available in upgraded controls packages, can help in decision-making," he says.

"'Managing by facts instead of by opinion' is how one stamper put it," says Falcone, describing the benefits of a fault log. "The better that we can present the problem or the fault to a stamper, the quicker it can correct the fault."

Specifically on the Tier One project in Ohio, the existing uncoiler drive was faulting out multiple times per day.

"Because control-communication problems hampered troubleshooting, the stamper did not know why the faults occurred, but would just reset and the line might run for another hour and then fault again and shut down," says Shane Steinhardt, applications engineer.

In addition, the line's looping pit would periodically encounter a tight-loop condition, also affecting productivity. And, adding on to the older control system over the years with equipment from various vendors further strained line operation and troubleshooting.

The cleanup included replacement of three human-machine interfaces with two units to simplify line oversight and incorporation of open-architecture

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communication to ease connectivity between line components and the overall control system. In addition, the stamper chose to replace existing older-technology DC drives and motors with new AC units. The installation of a shared DC bus between the uncoiler and the straightener axis helped share regenerative energy produced by the uncoiler during normal operation. The net result: less downtime leading to

improved productivity, which illustrates the power of improved controls for cobbled-together press lines.

Control Your Future

Of course, stampers must decide if downtime is excessive to the point that it justifies the expense of a controls upgrade. When trying to justify that cost, remember that a controls upgrade also offers benefits should line expan-

sion become necessary. The controls supplier and line integrator should assist the stamper in planning for future needs.

“When outfitting a press with new controls, the stamper should decide on a platform (hardware) that it wants to stick with,” explains Buehler. “This platform should be easily expandable and accept a form of distributed I/O that isn’t proprietary, such as Device-Net or Ethernet. When adding equipment to an existing press line, the stamper should select hardware from the same platform or select equipment that can hang on the same distributed I/O network selected for the controls upgrade.”

That said, a control supplier can retrofit the right hardware on added equipment.

“If the equipment is in good shape mechanically, you can make it work electrically,” says Buehler.

“A good controls upgrade is all about flexibility,” adds Falcone. “Just because a stamper has a properly outfitted press line today does not mean it can take on what comes tomorrow. Perhaps a control system with eight inputs for die protection works for now, but a few years later the process requires 30 inputs. Control systems offer that expandability.”

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