



Diary of a Pressroom Renovation:

Cellular Layout, Networked Communications

Last year, in its 40th year of business, stamper/fabricator Norlen Inc., Schofield, WI, invested \$2.5 million in capital equipment and in a brick-and-mortar addition to support its expanding customer base. It's grown by nearly 15 percent per year since 2001. Corey Suthers, Norlen president and third-generation owner of the family business, believes that investing in the newest technology is the key to maintaining a competitive edge. Among its newest equipment, the firm counts Link Systems' OmniLink 5000 press and automation controls, and new Aida straightside presses.

"We're very diversified, with the abil-

ity to produce goods from the first prototype part to high-volume production and distribution," Suthers says. "We offer short lead times and support integrated demand-flow manufacturing with on-site forecasting and replenishment of customer parts. Along with the new controls, we invested in LinkNet shop-floor management software to raise our efficiency levels and help reduce downtime. And the new presses increased our capacity and flexibility, essential ingredients to sustaining a high level of customer service while continuing to grow."

Housed in a 175,000-sq.-ft. manufacturing facility, Norlen primarily is a Tier One supplier but also serves as a second- and third-tier supplier to the recreational-vehicle, power-generation, fire-protection, HVAC, furniture, forestry and agriculture industries. In addition, it designs, produces and distributes Yar-Craft boats along with Tommy Dock hardware and accessories.

Norlen produces its soft and hard tooling inhouse, supported by a fully functional tool-and-die division. The company's precision stampings, fabrications and machinings are complimented by its use of laser technology for metal cutting and its ability to finish metal parts to high cosmetic requirements. Able to provide customers with a complete range of services under one roof, Norlen also offers robotic welding, polishing, assembly and supply-chain management.

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New Press Pair

When it went looking for new presses, Norlen shopped for a press that

could handle larger progressive dies as well as small dies. In addition, it needed the flexibility to perform a range of operations, from fineblanking and heavy drawing to more complex die work. It purchased a 400-ton Aida PMX progressive-die straightside press, with link-motion technology.

"The link-motion press brought new business opportunities," Suthers says, "including in-die welding and hardware insertion thanks to the drive's ability to slow the slide motion at the bottom of the stroke." The link-motion design also allows Norlen to reduce punch velocity and hold pressure on the workpiece, giving the material more time to flow—30 to 40 percent more time than with a conventional crank or eccentric motion. The link drive's modified slide motion allows the slide to regain the extra time spent at the bottom of the stroke as it travels over the top, so overall cycle times aren't lengthened. The press's slide motion also minimizes heat and vibration found in dies that run in conventional crank- or eccentric-shaft presses. The results: improved accuracy and reduced die costs.

"In addition, we've taken about a third of our tools that we've had a difficult time running on other presses, due to issues like inconsistent material thickness, and now run them on the PMX," continues Suthers. "We found in each case that the die ran perfectly on the PMX. We also anticipate lowering our die-maintenance costs as a result of the PMX's low deflection characteristics and the repeatability of the ram."

In addition to the PMX, Norlen also purchased a 200-ton Aida NSU straight-



The OmniLink 5000 press and automation control networks equipment to give Norlen information that has helped it minimize downtime, improve production and increase efficiency.

firm selected Link Systems' OmniLink 5000 press and automation controls and its LinkNet network-communications software.

"LinkNet allows our managers to see everything happening on the shop floor without leaving their desks," Suthers explains. "It maximizes production visibility to all levels of management, gives us additional job storage and protects our data in the event of a power outage."

Designed to help companies manage shop-floor operations, LinkNet works through the OmniLink 5000 press control to network all presses and ancillary equipment. The microprocessor-based OmniLink control provides operators with all press functions and diagnostics on a single screen.

"With the new control," says Suthers, "instead of troubleshooting through a PLC-16 channel input/output, our operators gain all of the diagnostics needed right on the terminal screen. By communicating directly with the operator and taking him

side unitized-frame press.

"We were running a lot of jobs on gap presses," Suthers says. "With the growth we've been experiencing, we wanted the deflection and speed a straight-side could provide, and with the NSU we've increased our throughput by as much as 50 percent. The NSU lacks the angular deflection found in a gap press, and it's faster, offering an 8-in. stroke as fast as 100 strokes/min.

Norlen positioned the PMX in a cellular layout next to the NSU, and uses it to run parts left to right while the NSU runs jobs right to left. "This arrangement allows us to run two different jobs at the same time using one operator," Suthers says. Both presses run high- and low-volume jobs using cold-rolled, hot-rolled and Type 304 stainless steel from 22 gauge to 3/8 in. thick. The manufacturer's newly ren-

ovated stamping division also boasts an underground scrap-removal system, installed in early 2004.

New Controls Heighten Pressroom Efficiency

With its presses conveniently located together in the new pressroom addition, Norlen's next step was to network the equipment.

"Networking our equipment meant we would have the ability to mine a wealth of information about our operations, instrumental in helping us minimize downtime, improve production and increase efficiency," Suthers says. To accomplish this, the

The larger bed size of this 400-ton straightside press easily accommodates larger progressive dies at Norlen. The press's link motion has expanded Norlen's capabilities to include in-die welding and hardware insertion.



straight to the problem, the OmniLink eliminates the extra steps required by a PLC-based control and helps the operator return to production more quickly. And, the control makes troubleshooting simple—we don't have to employ a programmer or electrician."

According to Suthers, this feature has been particularly useful with the company's die-maintenance activities. "We have been able to track the exact number of hit counts for each die," he says. "This kind of detail allows us to service our tools more efficiently and

Lacking the angular deflection of a gap press, part production at Norlen is more consistent with this new 200-ton straightside press, and the press runs as fast as 100 strokes/min. with an 8-in. stroke.

eliminate during production failures. We also can analyze downtime codes to identify trouble areas, and proactively work to remove or reduce them. The press control not only displays the reason for the last work stoppage but stores the last 126 reasons for work stoppages, two features unique to OmniLink."

Building a Performance History for Presses and Dies

By monitoring everything from die wear to the tonnage generated on each press with each stroke, Norlen is building a performance history with the press and the tooling, allowing the company to effectively schedule preventive maintenance. Norlen has increased its up time with the ability to store and retrieve jobs.

"We run several thousand tools, so the ability to save and store jobs is critical," Suthers says. Whether a job is performed only once a year or daily, the OmniLink control can interface with the press and any auxiliary equipment and record each detail including high and low tonnage limits, shut heights, stroking speed, die protection and programmable limits.

Aside from providing simple setup and rapid job changeover, employees can access, at a glance, machine and tool notes left by previous operators. "We have more than 1000 jobs stored on LinkNet," Suthers says. "Because this information is available at the push of a button, we've been able to eliminate the use of hand-written setup cards and significantly reduce the amount of time it takes to set up a job." MF

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