Slideforming on a Small Scale Nets Big Results

With just 12 employees, Hamond Industries zeroes in on slideforming work, using its small but flexible workforce and value-added services to get the most out of its production equipment.

BY LOUIS A. KREN, SENIOR EDITOR

Stephen Pogson, with 22 years at Hamond, is the lead setup hand. As one of only 12 employees, he is skilled at all phases of slideforming production, troubleshooting and maintenance.

As a small fish in a big pond, it's best to focus on a specialty, develop a unique value-added approach, grow an experienced and flexible team, and get to work. That's the recipe for success at Hamond Industries Ltd., Concord, Ontario, Canada, a 12-person slideforming operation.

Just outside Toronto, the company produces 40-million slideformed parts per year from a variety of alloys for a variety of industries, courtesy of a small but flexible workforce. Operators tend a small number of slideforming machines, including BHS-Torin V81 and V82 10- and 20-ton verticals and a single U.S. Baird No. 2 horizontal. A couple 30-ton conventional presses produce a small amount of straight stampings for customers who want Hamond as a single source for stamped and slideformed parts.

"We don't focus on a specific industry," notes Michael Wagner, Hamond president. "Many stampers specialize on automotive work, avoiding the intimidation of trying to cover the entire waterfront. We are more like injection-plastic molders. We make whatever our process can make."

That part roster includes electrical contacts and conductors; clips for eyeglass cases, tape measures, access panels, circuit breakers and office furniture; formed sleeves and bushings for cookware and other uses.

Value-Added on Tap

Though Hamond does not focus on a specific industry, its expertise on value-added services gives the company a unique slot in a sea of larger slideformers. Wagner cites tapping expertise as a major reason for Hamond's good fortune.

"We can't do in-die tapping due to short press strokes in our slideforming machines," explains Wagner. "So we use air tappers mounted on press beds."

The bed-mounted tappers reduce available die space, concedes Wagner, a tradeoff the company's willing to make.

The die and press in this arrangement perform material cutout while the tapper sits between the die and the

forming area of the machine. Therefore, the tapper taps strip prior to part forming, offering big advantages to customers: less scrap and lower reject rates.

"Most tapping occurs after forming as a hand process, or the part reorients via a bowl feeder or something similar for post-forming automatic tapping," explains Wagner. "I believe that these scenarios, especially hand tapping, provide too many opportunities for breakdowns. Tap quality suffers because operators are bored—the work is not motivating."

Plus, he notes, a hand process fosters confusion, as nontapped parts may be placed in the tapped group and manual taps may wear. As operators concentrate on completing the job, they often do not pause to check for wear on a consistent basis. Even with automatic, after-forming tapping, Wagner believes tap wear may produce poorly tapped holes. At Hamond, he explains, in-machine sensors and checks stop most incorrectly tapped parts before they enter the forming area, as do periodic visual inspections.

But in-line tapping conducted prior to forming does present challenges, acknowledges Wagner.

"We must be careful not to distort the threads while forming," he says. "Bending very near to that tapped hole may distort the hole, rendering it useless for screw insertion. But our tapping method, when properly applied, can produce very high-quality and high-consistency taps."

To help meet those challenges, roll tapping is the method of choice at Hamond, offering the advantage of work-hardening and resulting solid threads. Also, unlike thread cutting, says Wagner, roll tapping does not produce swarf, or thin metallic shavings. This eases downstream processing and screw insertion, especially true if the part is to be plated, as plating in the swarf results in insertion nightmares.

Hamond runs its tappers at a rate 5 to 10 percent faster than tap-manufacturer rating, with a tap-life increase of three to five times as compared to manufacturer expectations, claims Wagner. Higher speed and increased tap life come courtesy of the company-developed cooling system that cools the tap and the workpiece, reducing wear and thermal-expansion effects. As Hamond adds new material to the product mix, it works with tap suppliers to obtain the correct combination of tap, coating, lubricant and dilution.

Accurate material slitting and feeding also minimize challenges.

"Integration of the feeder, straightener, press and form area onto one machine bed enables very accurate feeding," explains Wagner. "This delivers a very accurate hole under the tapper head. Therefore, no side thrust occurs on the tapper shaft, eliminating that source of thread distortion and resulting in poor tap life. And accurate slitting of material by our suppliers, combined with very tight strippers, eliminates positional inaccuracies across the strip, again ensuring no side thrust on the tapper shaft."

Hamond can produce closed parts using material exhibiting springback, a difficult process. Examples include these belt clips, supplied to various industries.

A new air system installed following a move to a larger facility also boosts tapping capability. The redesigned clean, dry air supply keeps constant pressure, enabling predictable and rapid performance.

For the customer, this tapping expertise brings an economical part. Hamond ran cost projections on tapping in-house versus tapping offline at a contractor, and in-house won every time, according to Wagner. That's true even though in-process tapping slows part production, adding slightly to part cost. For example, while the machinery may produce 90 parts/min. untapped, tapped parts, depending on material, may reduce production to about 60 parts/min. That's because the machine slows down to synchronize with tap speed. The company hopes to add multiple tapped holes to each part, another value-added option.

Flexible, Experienced Workforce Pays Dividends

With only a dozen employees, Hamond gets the most out of its workforce to produce quality parts in a timely fashion. A one-shift operation forming parts, designing, constructing and maintaining tooling, and maintaining machinery requires teamwork and a range of skills from each employee. With slideforming at Hamond, dies provide cutout while actual forming occurs in a separate, intricate forming area of the machine. That necessitates skilled forming-setup people—like a toolmaker in a regular stamping shop, says Wagner—to solve forming problems.

"Here, the toolmaker prepares a die and form tools, making sure they function properly in the machine, while the setup person performs machine setup and makes decisions related to final part shape," he explains. "Throughout the process the two work together, each familiar with what the other does. Some of our people started out in the toolroom and now run production, and some setup people help in the toolroom when there's a push.

"We tell our customers that they'll never have a setup person working on a part run that doesn't know all about slideforming," he continues. "We aren't a mixed shop. We don't have 45 presses and two slideforming machines off in a corner. Slideforming is all we do."

To assist the small workforce, the company no longer accepts hand-fed or short-run work, and allows most jobs to run unattended, save for periodic part inspections.

The tool-design department, too, does what it can to minimize extra work

down the line. At Hamond, the senior designer, Michael's mother Margie, works with a department including a designer from a progressive-die stamping shop and a former architecture graduate. On some projects, they add variables so that final part design produces a family of tool sets. These take into account whether a part, say a round bushing, may need to be longer or shorter, thicker or thinner.

"If we receive another quote for a similar part we can refer to that family of drawings," says Wagner. "That means we can release drawings to the toolroom a few hours after we get the job. The huge investment early on to produce that family pays off as we can crank out all sorts of formed bushings without huge design changes. When a customer really needs it, we can tool a job in less than two weeks."

Wagner's background in computing allows him to lend a hand in design, and helps him understand challenges facing the team.

"That makes me more demanding of the designers," he says. "I know there's a way to do something on a computer because I have read it in the manual. Then I tell the designers to find the details and figure it out."

Putting Capabilities, Experience to Work

Combining the equipment, experience of employees and value-added capabilities, Hamond has helped customers acquire more economical and higher-quality parts.

In one case, the slideformer produced a tapped stainless-steel weld bracket attached to another which, for technical reasons, could not be tapped itself. The tapped part was welded to the main unit in the customer's factory. Hamond tapped this part at 60 parts/min., stopping only once or twice per day for coil change. The tap-cooling system not only sped the entire process, but produced high-quality threads and brought longer tap life, reducing downtime for tap change.

For another customer, Hamond produced on one part both a simulated thread—a keyhole shape with relief that mates to a screw—and a sharp burr. The sharp burr was just that, according to Wagner, a bad burr made by a purposefully bad cut. For lighter parts, the Hamond-made part held the customer's part in place via the burr. In heavier parts, a self-tapping screw was driven through Hamond's simulated thread and into the customer part.

Hamond also produces closed parts, a difficult process when the material exhibits springback. Nonetheless, Hamond has accomplished this on dozens of parts including eyeglass-case clips, belt clips, and closed rings and bushings of various types.

Minding the Materials

Steel, spring and stainless as well as other types in strip or wire form, represents 80 percent of the material formed at Hamond. Copper, brass and associated alloys comprise another 15 percent, with the rest a hodge-podge.

As for availability and costs related to recent U.S. tariffs, Wagner says Hamond is somewhat protected because it is a Canadian company, and also because, as a slideformer, it has unique material requirements.

"We use the slit-edge of material as a part edge, so we need accurately slit and accurately rolled material," he explains. "Service centers blend that into the material cost so increases are smaller than for Canadian straight stampers. Also, we buy small amounts of material, partial coils that service centers had stored in back rooms. When those run out, things will be much tougher should tariffs still be in place. We have a lot of jobs where we can't absorb a 30-percent material increase, and our customers won't be happy. That said, because slideforming is unique and because we add so much value, it's not often where a customer will pull out a job due to such an increase."

Material-input cost increases average about 20 percent for Hamond, says Wagner. That compares favorably to the 30 to 50-percent range cited by Canadian straight stampers at a recent PMA-sponsored tariff roundtable for Canadian metalformers. Although the company may purchase materials from a Canadian company, points out Wagner, that material may originate from a U.S. source, bringing the tariff surcharge. Right now, the biggest challenge, unpredictable lead times, forces early ordering by Hamond. **MF**

Forty-Four Years and Counting

In 1958, John Wagner formed Hamond Industries Ltd. as a three-person operation focused on horizontal slideforming, John's wife Margie joined a couple of years later. A great deal from a fire sale brought the first vertical slide machine on board, and the company has traveled the vertical path ever since. Son Michael got his start by helping out on weekends.

Through the years Hamond took over adjoining leases to add space. Five years ago, the company leased 24,000 sq. ft. in Concord, Ontario, Canada, and made the move. At that point, the company sold off two of its three horizontal slideforming machines, converting tooling to run on the remaining unit.

With John retiring a couple of years ago, Michael oversees the company as president. Margie works part time in a senior designer role while John still finds time to add content to the company website, www.hamond.com. With small machine footprints, the company can double its equipment inventory and still have room. Conversely, producing about 40 million parts per year, Hamond can double that workload without adding equipment.