

Is Your Part a Fourslide Part?

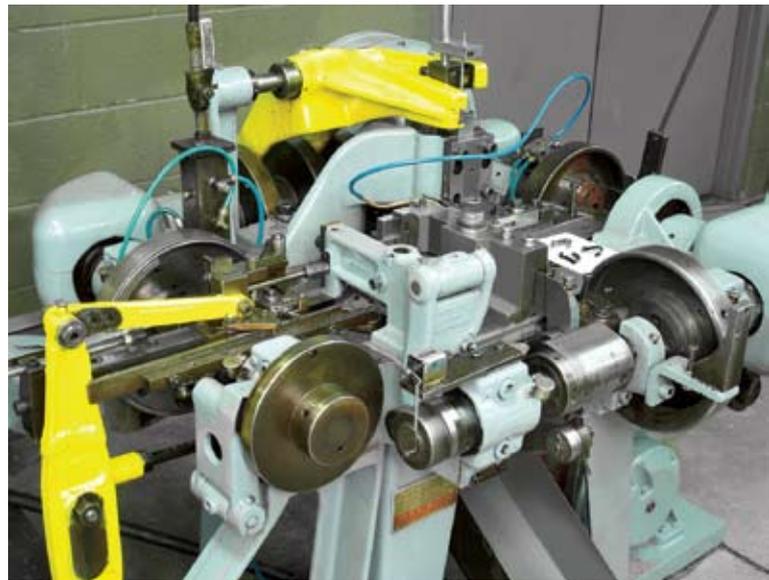
Manufacturers are slashing part cost, speeding product delivery, and streamlining quality assurance with fourslide operations that integrate stamping and forming.

By Del Williams

Manufacturers have traditionally relied on power press machines to stamp out many of their parts in large numbers at high rates, but that may be changing as the economics of production change.

Not long ago, manufacturers would routinely set up complex tooling—such as timed cams and benders—to perform sophisticated work on progressive power press operations, expecting the cost would amortize over the life of the product. Today, however, the trend toward greater customization, shorter product life cycles, smaller lot sizes, and higher material prices has thrown such expectations out the window.

In a world where the Iomega Zip Drive was a hit one day and gone the next, manufacturers can no longer accept a typical power press tooling price of \$20,000 and up as simply the cost of doing business. In a time of Six-Sigma quality and Just-in-Time delivery, they can no longer tolerate tooling lead times of six



Depending on part size and complexity, production of up to 15,000 pieces per hour can be achieved using fourslide machinery. Image courtesy of Fourslide Spring and Stamping, Inc.

months for involved work, or laborious hand adjustment after production to get specifications right.

Instead, many manufacturers are turning to a process known as fourslide forming, an advanced metal stamping process that integrates stamping and forming operations. Although the fourslide part-making process was previously used mostly for complex work, such as jobs with intricate forming, multiple bends, or elements beyond 90 degrees, savvy manufacturers are now choosing the process over power press operations to slash part cost, speed product delivery, and streamline quality assurance.

Whatever its name, if a part is stamped or formed, less than 2 inches wide, and less than 0.075-inch thick, it may be a fourslide part.

Fourslide forming can be used to make precision metal stampings, flat springs, and wire forms, as well as complex forms with multiple bends. Whatever its name, if a part

is stamped or formed, less than 2 inches wide, and less than 0.075-inch thick, it may be a fourslide part.

Its unique integration of stamping and forming operations makes the fourslide part-making process capable of cutting typical tooling costs to as little as \$3,000, halving tooling lead times, and eliminating after-production adjustment to meet specifications. The process begins with the raw material in flat strip form off a coil, which is stamped or blanked in the progressive die section of the fourslide machine. The strip is then fed into the forming section of the machine, where four tool-carrying slides approach the part from the north, south, east, and west, forming the material around a center tool or mandrel. The set-up of the machine cams determines the sequence of tool strikes. After forming, the finished part is ejected into a parts catcher. (For an animated explanation of the fourslide process, visit www.fourslide.com/fourslide-reference.htm).

Because fourslide machines have cams and slides built into them, this eliminates the need for the costly, complex tooling of progressive power press operations. With the fourslide process,



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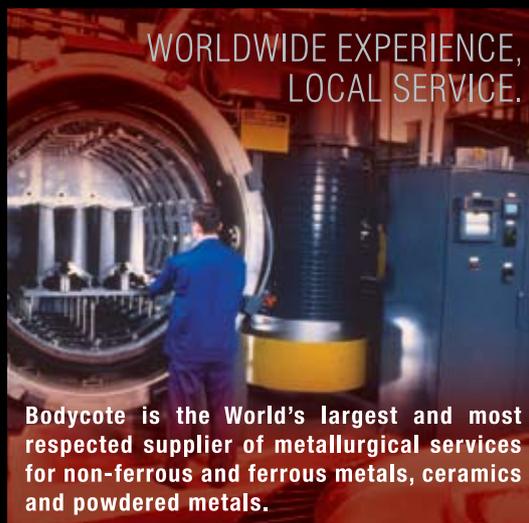
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precise multiple bends, twists, tapped and threaded holes, and even controlled burr direction and location can be accomplished in multiple operations before the part is ejected. Production rates up to 15,000 pieces per hour can be achieved depending on part size and complexity. Since the process typically starts with material the width of the finished part, it usually generates less scrap than power press machinery, so material costs are lower as well.

**Cutting cost and lead-time
to grab market share**

When DFCI Solutions, a manufacturer of specialty fasteners and hardware, sought to expand its European market share with the launch of several new products, typical power press machinery wasn't up to the challenge.

"To get our foot in the door, we needed very low prices, and to keep the business we needed very reliable product with just-in-time delivery," says John Suchopar, plant manager for DFCI Solutions. "But power press tooling costs were exorbitant, and the lead times to construct power press dies would've taken about six months. That was unacceptable. We had to minimize upfront tooling cost especially when we weren't sure how long a particular product would last in the marketplace."

Moreover, Suchopar was looking for part production that would simplify part revision and the cost of tool maintenance. "Because customer needs and market conditions constantly change, you need a cost-effective way to revise parts and maintain tooling," he said. "Power press machinery wasn't ideal because of its high up-front costs and complexity to maintain. There's a lot of moving parts that wear with expensive downtime."

Suchopar turned to **Fourslide Spring and Stamping, Inc.**, a

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Bristol, Connecticut-based parts supplier specializing in the integrated stamping and forming parts operation called fourslide.

"Because the four slides move independently along two axes, they can precisely bend and form without the complex tooling required of power press machines," says Suchopar. "Combining forming with stamping in one operation, using fourslide, we saved about 75 percent in tooling costs and about 25 percent in total part costs."

The fourslide process also compressed production lead-time from a lengthy six months down to relatively short eight weeks. "Since fourslide reduces tooling cost and complexity, it has simplified part revision," adds Suchopar. "Because the process uses fewer moving parts than power press, there's less maintenance or downtime."

"Fourslide has plenty of speed for our needs," says Suchopar. "We'd set a deadline and would receive part shipment a few days earlier. "Recently, we've shifted five products, including clips, brackets, and a line assembly cage, from power press machinery to the fourslide process. The way things are going, we'll be shifting plenty more."

Improving quality and holding down cost

To strengthen its position with customers and boost its competitive edge, Control Products, Inc., a manufacturer of thermal and waterproof switches, aimed to streamline its quality assurance process and hold down prices despite rising material costs.

Material memory was a challenge because stock had to be properly straightened from rolls so it wouldn't spring back. "Every lot of material presented a problem in consistently holding an angle or two on production parts," explains Glenn Heimroth, quality assurance manager for Control Products. "The parts weren't complex, but assuring accuracy was critical."

One customer, for instance, required a switch to actuate every time a flat spring was depressed 0.5-inch within a certain tolerance. "If the springs were inconsistent, we had to adjust our finished goods by hand, which was time-consuming and expensive," says Heimroth.

Power press equipment was proving too inaccurate and costly on a number of vendor-supplied parts and in-house opera-

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—John Suchopar,
plant manager, DFCI Solutions

tions. A vendor using power press equipment, for example, had trouble maintaining the proper angles on latches. Thus, snapping interlocking parts together was difficult due to incorrect alignment.

In search of a solution, the company turned to the fourslide process. "We now get the parts consistently right, on time, at lower cost," says Craig Morse, Control

Products' purchasing manager. "Rather than relying on outside power press vendors or maintaining older dies in-house, we're shifting some high-volume work to fourslide."

According to Heimroth and Morse, the vendor supplying the fourslide parts, Fourslide Spring and Stamping, Inc., helped to resolve a number of quality assurance and cost issues. Because of the increased accuracy and operational flexibility of the fourslide parts, for instance, the tooling for right and left-hand covers and brackets was combined in the same tool, effectively saving the cost of an entire tool. The process has also reduced material scrap.

"Like a lot of manufacturers, we're trying to focus on what we do best," says Morse. "For us, that's manufactur-

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ing switches, not parts for them."

To further lower part cost, mitigate escalating material costs, and streamline inventory management, the vendor allowed Control Products to buy in bulk and schedule needed shipments over a two-year contract period.

"In spite of rising material costs, Fourslide Spring and Stamping, Inc. has helped us hold the line on price while improving quality and delivery," concludes Morse. "It's helped us expand our business. For anyone having trouble keeping prices down, getting consistent parts, or maintaining tooling, switching to fourslide can be cost-effective. That's true whether you're dealing with involved forms or simple power press operations."

Fourslide Spring and Stamping, Inc. is an ISO 9001:2000-certified manufacturer of spring and wire products, including precision flat springs, metal stampings, contacts, and wire forms for a wide range of medical, electrical, automotive, aerospace, military, consumer, and industrial applications.

To view an animated demonstration of the fourslide manufacturing process, visit www.fourslide.com/fourslide-reference.htm.

For more information, call 800-832-6405 toll free; fax 860-584-5960; visit www.fourslide.com; or enter **RF724**.

Del Williams is a technical writer based in Torrance, California.

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*—Craig Morse,
purchasing manager,
Control Products, Inc.*

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