

Office Furniture OEM Raises Profitability, Controls Quality and Inventory With In-House Stamping Lines

With vendor part deliveries sometimes being up to eight weeks late, Datum Filing Systems (York, PA) had a problem delivering finished products on time and at competitive prices.

To solve this, they decided to do the work internally. With the right metalforming equipment, they were able to bring down product costs and delivery times along with initiating lean manufacturing with gib guided metal forming equipment. In some instances product costs were cut by 50% compared to what vendors were charging. Hydraulic Press application story

Datum Filing Systems (DFS) has been designing and manufacturing filing, storage, and office furniture solutions for more than 30 years. Founded on Long Island, NY by Frank Potter, DFS is still family owned and operated. "We've been around since 1968," said VP of Manufacturing Steve Potter. "The business was started by my father in the basement of his house. After he retired in 1990, four brothers took it over and moved it to York, PA from New York in 1992. In 1997 we bought a stamping press and added 25,000 sq. ft. on the building and bought another building across the street. In 2000 we sold the buildings that we were in and moved into our current 120,000 sq. ft. facility, one with room to add another 100,000 sq. ft."

He added, "Our original product line was a telephone-card filing system. Then it grew into rotary files that turned like a lazy-susan. We manufacture these rotary files with diameters from 24" to 24'. They have also been motorized and computerized. It's a big product line for the phone companies. Then we moved into producing office furniture including desks, work areas, and modular furniture. In 1992 this was our main business. Now we are specializing in stackable shelving filing systems. This shelving grows as you need it. We also manufacture high-density mobile-storage system units mounted on carriages that condense the file space by eliminating aisles between file banks. Our focus right now is on filing and storage."



Evolution of product lines, production requirements

As the company moved into the stackable-shelving market, the products became even more popular, and the company wasn't prepared to mass produce the quantities of parts needed. The company had tooling made and parts were produced by vendors. "With vendors, you can have the typical challenges such as maintaining quality levels and ensuring delivery times," added Potter. "This is part of the reason why we decided

to bring parts production in-house to get it under control. We were manufacturing some of the products in-house. But for our filing-system dividers, we had an outside vendor making them for us. We were going through 40,000 to 50,000 units every couple of weeks and it got a bit costly at this point, but it served its purpose at the time. Then we started thinking about bringing the manufacturing process in house, and began looking at smaller press and coil feed lines. We also tried to save costs as much as possible by looking at other products we produced and then came to the conclusion that we needed a larger stamping press.”

The company installed a Pacific Press Technologies (Mt. Carmel, IL) OBL 300-6 300-ton hydraulic stamping press in 1997, which they primarily use for blanking. Potter said, “This is a versatile press with a 3 x 6’ bed size that can withstand the shock of blanking operations. It also has versatility to do other types of forming operations. Feeding this is a Coe Press Equipment (Sterling Heights, MI) CPRF-M24 AC servo-driven digital roll feed, a CPPS-PO-225-24 power straightener that handles a coil up to 24” in width, and a Coe CPR-PO-8024 pull-off coil reel. The maximum coil weight for this line is 8000 lbs.”

DFS then added a mechanical press with a Coe Servomaster Series-1 roll feed that can handle up to a 12” wide coil, a CPPS-250-12 power straightener and a CPR-PO-6018 pull-off coil reel that can handle a 6000 lb coil to help increase their capacity for new product lines. “When we moved to Pennsylvania, we started out in a 40,000 sq. ft. building,” said Potter. “As business grew, we found the need to add on. As our file-system dividers were being made on the outside (100,000 at a time), we were paying about 60 cents per divider. When we brought it inside, we got the manufacturing costs down to about 22 cents. By bringing them in-house, we actually paid for the expansion of the building in about 5 years. The Pacific OBL Press gave Potter hydraulic flexibility for variable stamping speeds and a wider opening for die setup. “It’s more versatile for getting in and out of the opening for tooling changes, and we do some forming on it too, not just blanking. With a hydraulic press you have the flexibility of slowing down and putting dwell pressure on the parts where you really need it, ...completely controlling the stroke. It was the right machine for us.” The OBL has a rapid advance of 460” per minute, fast press of 175” per minute at 120 tons, and a normal press speed of 50 IPM with a fast return of 280 IPM. “To increase our throughput with the press, we try to keep our strokes as short as possible. Typically they are 2” strokes, because there are ejector pins in the die to pop the part out. Anything less than 2” would interfere with the ejector pins.”

DFS also produces stackable shelving in which they produce large parts called skins or wrappers. Tooling is designed so that one die can do a family of parts, and there’s one set of tools to do different widths. “We have 24”, 30”, 36”, 42”, and 48” widths, and one set of tooling that does all of them. Some of these parts get up to a blank length of about 88”. Speed is not as important as having the proper length. We’ll set the different part lengths by programming the feeder’s CNC control and use the same tooling. On this line, we use the servo roll-feeder with a 24” width. It has a maximum speed of 436” per minute.”

On one line, they had to dig a looping pit to allow the coil to advance rapidly for a part that is 88” long. On this line, the smallest part is a divider that’s about 16” in width and about 5” in length. It is a semi-progressive die (two hits) that would punch notches or other features and then feed 5”. Then it’s ejected onto a conveyor. They run these at about 22 pieces per minute. Produced on the same press line, their largest part is 21” X 88” in length blanked directly from the coil without trimming, and runs at 12-pieces per minute. “Feed length precision is critical and the Coe servo feed does an excellent job keeping it within tolerances,” said Potter. “You plug into the program what you need, and it maintains a +/- 0.005” tolerance. Any change in length of this 88” part shows up in the spacing of small holes that we have punched in the blank during this operation. Because these units are assembled by customers, hole location and spacing are critical. If it’s not

correct when they are assembled, edges and flanges will not line up properly. Then the product won't be aesthetically pleasing."

On large parts, once the blank is made, there are secondary operations such as roll forming or press-brake procedures. "It's critical to start with a flat part, and the Coe straightener does a great job of taking the coil set out for us," remarked Potter. "In another application, some of these parts go through an automated piece of equipment where they are destacked and sent through a roll former into a computerized wing bender which forms up the U-shape for the wrapper (the outside piece of a file cabinet), which then goes to three spot welding and three other operations. So flatness is critical here. If the blank has some coil set, it's going to have problems going through the automated machinery. It's more than removing the coil set over the large surface to be aesthetically pleasing. It's also dimensionally-critical for secondary operations."

Datum was introduced to the Pacific and Coe product lines through Mid-Atlantic Machinery, their area sales representative. "We checked out each company and found them to be well-established quality manufacturers. We then decided to go with them. They've been very good for us. I've had no complaints with either of them whatsoever," remarked Potter. "I didn't investigate many other lines. On the press I did look at some other manufacturers that built mechanical ones. But even the cost of these machines far exceeded the Pacific Press price. It was part of a cost reason why we went with a hydraulic press, and it was a large solid press for us. It gave us the flexibility to stamp larger materials. We don't use anywhere near its maximum tonnage, but it's better to have more than less."

In-House vs. Contracted Work...and the Effect on Profits, Product Availability

Processing versatility is very important. A week's production on the Pacific OBL typically processes a range of about 50 different parts and it allows us to control our inventory levels, too. Our lot sizes were around 40,000 to 50,000 pieces at a time. Now they are about 10,000. The larger parts like our skins and wrappers we used to run 10,000. Now we run about 1000. Due to the design of the tooling, changeovers are down to two or three per day in a nine hour shift. This keeps press time up. We run three shifts, but only one on the stamping equipment. The other shifts do the secondary operations on the parts."

When using outside vendors, DFS was typically at a four-week production schedule. "When vendors didn't deliver parts on time, it hurt us," said Potter. "We realize that as a manufacturer also, we have to deliver on time. We spent a lot of time on inspection and waiting for delivery, causing us to work more overtime and work at non-efficient levels. Through this, our profitability was being limited with wasted work and not having the product on hand to ship to our customers (often a result of lost orders). We had many parts made on the outside, but now they are all made in-house.

"Today we are close to meeting all our delivery schedules. On one specific product, we are now doing it at half the cost. Bringing work in-house and controlling our own scheduling and quality destiny has enabled us to work for eight or nine years without a price increase." Even after the company went with in-house stamping equipment, they continued to run larger part volumes to eliminate some press setups. But through lean manufacturing techniques they became a lot more efficient on their die changes. They went from three to four hours to about 30 minutes, and the staff is working to reduce this.

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