Combination Machines

Ventilation manufacturer clears the air on higher productivity

Because the loading, punching, and shearing of parts is automated, there is a reduction in scrap and manual labor.

Since its founding in 1987, Fantech Ltd., Bouctouche, N.B., has manufactured ventilation products to improve air quality for residential and commercial applications.

In addition to its 130,000-sq.-ft. facility in New Brunswick, Fantech has another manufacturing facility in Lenexa, Kan., and distribution centers in Reno, Nev., Mississauga, Ont., and Lenexa.

Fantech's parent company, Sweden-based Systemair, has a global network of 50 subsidiaries on three continents, making the Systemair Group one of the largest air movement companies in the world.

Fantech's product line includes:

•Inline fans for bathroom exhaust, dryer boosting, and radon mitigation.

•A line of indoor air quality equipment such as heat-recovery and energy-recovery ventilators and whole-house HEPA filtration.

•Large cubic feet per minute (CFM) fans for commercial applications such as inline centrifugal fans for round, square, and rectangular ducts; exterior-mounted centrifugal fans for walls and roofs; multiport centrifugal fans; low-silhouette axial fans; and air curtains.

•New rooftop enthalpic wheel units for commercial applications.

According to Ron Caissie, Fantech's production manager, the company has traditionally grown between 15 and 20 percent per year, until the recent dip caused by the current recession.

Increasing Capacity

Before 2007 Fantech fabricated its sheet metal with two stand-alone hydraulic turret punch presses.

"We began running three shifts during the summer and didn't have enough capacity to keep up with increased demand," said Caissie.

Fantech began its search for new equipment and visited the FABTECH exposition, where Caissie and his team first saw the Finn-Power Shear Genius® punching/shearing flexible manufacturing cell.

"We were familiar with Finn-Power since our parent company, Systemair, has three Shear Genius cells and a Night Train FMS® for material management in its plant in Sweden. However, we had the final decision on which equipment to choose. We looked at other machines, but selected the Finn-Power because of the quality of the Shear Genius."

Punch/Shear Combination

The objective of the punch/shear concept is to provide a single machine capable of transforming a full-sized sheet into finished parts. These parts can be moved to final production stages for immediate integration directly into final product assembly. These machines accomplish this in less floor space—approximately 30 ft. of space in this case—fabricating raw material into finished parts on one machine. As loading, punching, and

shearing of parts become automated, the result is finished parts with a dramatic reduction in scrap and manual labor.

Combination machines can perform the most demanding jobs with minimal setup times and provide lights-out operation. These systems also can decrease material waste through nesting programs. The level of automation can be customized through the manufacturer's modular systems for raw material storage, loading, unloading, sorting, and stacking. In many cases, these features also can be added later as budgets allow and production demands increase.

The punch/shear also can eliminate wasteful skeletons and costly secondary operations such as deburring.

Nibble edges on the part exteriors can be eliminated through the use of the integrated right-angle shear. In fact, the same clamps that hold the sheet for punching also hold it for shearing. In essence, the punch/shear allows the automated process to begin with a full-sized sheet of material and end with a finished part after automated loading, punching, forming, shearing, and unloading.

"We liked the punch/shear combination concept," said Caissie. "It has improved our quality. Before, we had to shake the parts and contend with microjoints and skeletons. With the Shear Genius, the parts come out to a bin sorted and go directly to the bending operation."

Unit multiples varied from six to 63, and while this worked well with the high-volume items, with low-volume products, sometimes the company needed only three units.

Better Sheet Metal Utilization

To fabricate its products the company uses six different gauges of sheet metal. Before the installation of the punch/shear, Fantech needed three different sheet sizes for each gauge to try to minimize waste.

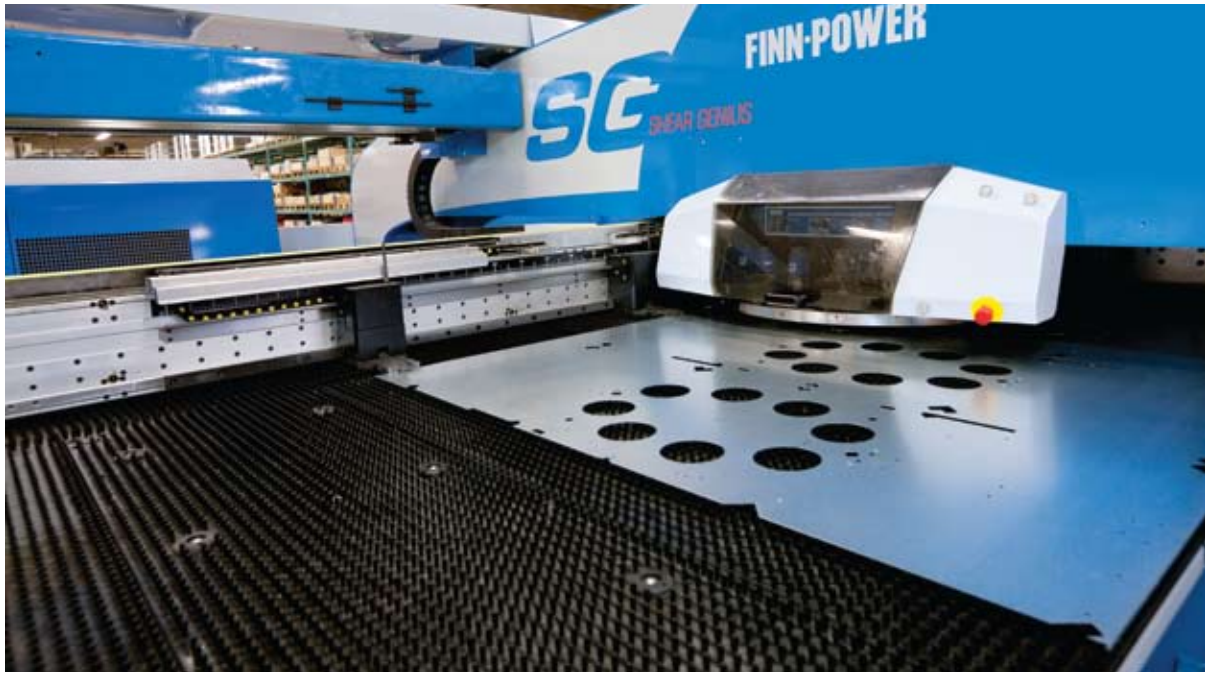
"This meant that we had to stock 18 different stacks of metal product," said Caissie. "Today we are down to six stacks because the Shear Genius can utilize 8 by 5 sheets. This has increased our sheet metal utilization by 10 percent and decreased our metal inventory. It has given us more options because we can now nest the parts on a full-sized sheet."

Fabrication at Fantech also has become more flexible.

"We used to program parts for units using various multiples," said Caissie. "We would try to optimize the sheet utilization by making a predetermined multiple of the finished product."

Unit multiples varied from six to 63, and while this worked well with the high-volume items, with low-volume products, sometimes the company needed only three units. The remainder of the parts for that unit went to inventory. Now, if the company needs three units, the system is programmed to make only the parts for three units.

"This has given us a lot more flexibility and has reduced our finished parts in inventory. Now we only build what we



Before the installation of the punch/shear, Fantech needed three different sheet sizes for each gauge to try to minimize waste.

Fantech manufactures ventilation products to improve air quality for residential and commercial applications.

need for production," said Caissie.

Other features of the punch/shear combination machine that benefited Fantech were:

•Toolholders. The system at Fantech incorporates an individual toolholder concept that allowed the company to design their own turret layouts. Unlike other designs, specific tool stations are not machined into the turret. Up to 10 autoindex, forming, or Multi-Tool® stations may be installed.

•Autoindex. Finn-Power's autoindex system rotates the punch and die in their toolholders. Rotation in 0.001-degree programmable increments gives the machine the ability to rotate beyond 360 degrees, allowing it to automatically select the shortest path to rotate to a programmed angle input into the NC part program.

•Multi-Tool. These stations increase the number of tools available in a turret, reducing setup and increasing productivity. The Multi-Tool system allows multiple tools to be put in one station. These tools have six, eight, 10, or 24 different punch/die combinations in just one station—a turret within a turret.

"We get about 300,000 hits per tool with the Shear Genius. In addition, we had two employees, one per shift, sharpening tools all day. Our tooling cost was approximately $100,000 per year. Now we do weekly maintenance of the machine and sharpen maybe 10 tools per week."

Ron Caissie
Production Manager
Fantech

"We have three Multi-Tools and they have helped us dramatically cut setup times," said Caissie. "With our old turret punch presses, we were down 10 to 15 minutes every hour for tool changes. With the Shear Genius, we are

down about 30 minutes per day for tool changes."

•Upward Forming System. An upward forming option provides more accurate forming and greater forming heights (up to 0.63 in.) and diameters (5 in.). Another advantage is that all dies are at the same height and there are more high-forming dies in the turret; therefore, risk of material damage is reduced and machine uptime increased. Fantech has four upforming stations.

Labor and Tooling Savings

Prior to installing the punch/shear machine, Fantech had two CAD programmers and two machine operators. Now that number has been reduced to just two employees who split the programming and machine operator duties.

"Now the machine operator can perform other duties while the Shear Genius is running," added Caissie.

The company also has realized substantial savings in tooling costs.

Ron Caissie saw early on the advantages of the punching/shearing combination concept.

"We got only 30,000 hits per tool before sharpening was required with the old turret punch press," said Caissie. "We get about 300,000 hits per tool with the Shear Genius. In addition, we had two employees, one per shift, sharpening tools all day. Our tooling cost was approximately $100,000 per year. Now we do weekly maintenance of the machine and sharpen maybe 10 tools per week."

Today 99 percent of Fantech's sheet metal fabrication is processed through the punch/shear system.

"The Shear Genius is much more efficient than our previous presses. With lights-out operation, it has allowed us to delay adding a second shift," he said. ■

For more information, visit www.fantech.net and www.finnpower.com.