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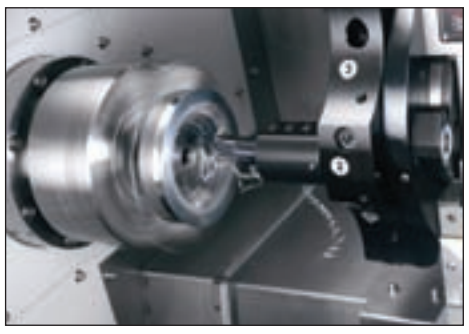


Turning centers designed for production applications

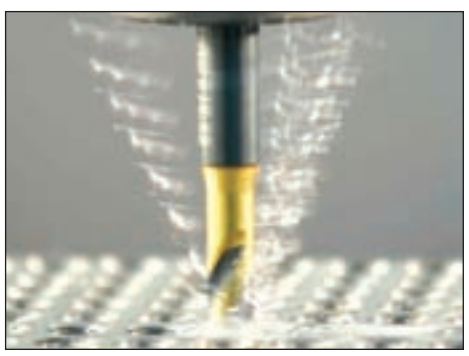
The Fadal PTC Performance Turning Centers Series of horizontal turning centers distributed by SMS Machine Tools Ltd., Rexdale, ON (smsmachine.com) includes four models intended for production applictions. The machines feature linear guide ways on all feed axes.

Info Card 243

Robotic cell ensures cost effective solution

The eCell dual fixed table robotic cell from the Lincoln Electric Company of Canada Ltd., Toronto, ON (lincolnelectric.ca) provides a cost-effective welding solution for small- to medium-sized parts. It is capable of MIG, Synergic MIG, and MIG Pulse or flux-cored procedures.

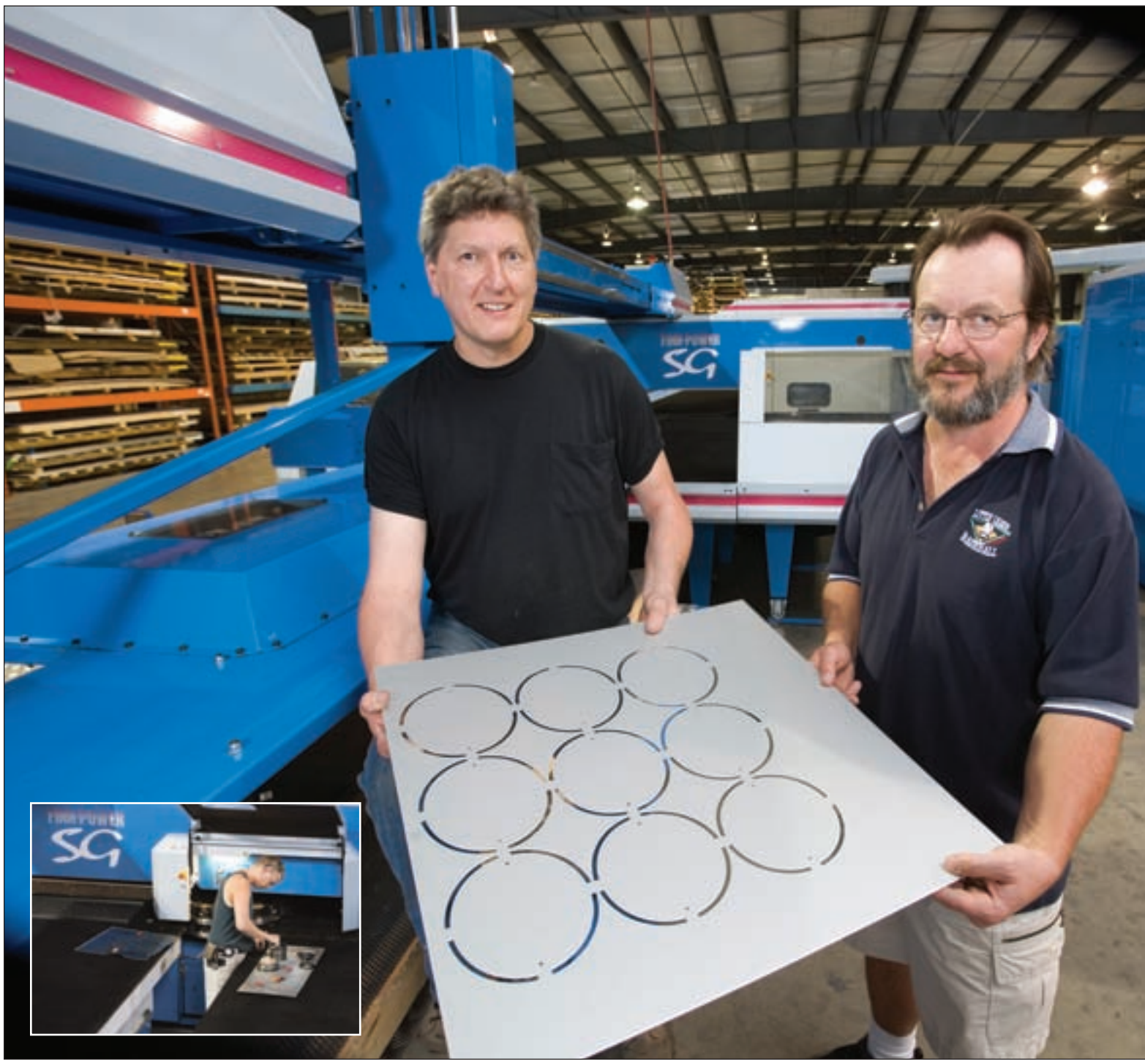
Info Card 287



Powdered metal tools provide increased tool life

The Synchrospeed from Prototyp, Crystal Lake, IL (prototyp.com) is a new range of HSS-cobalt powdered metal tools for rigid tapping. The tools offer increased tool life and greater consistency of results.

Info Card 277



(Left) Rick Grant, production manager and John Reitmeier, general manager with Grant Metals, hold a sheet punched on the firm's new Shear Genius flexible manufacturing cell.

Growing pains eased with automation

CALGARY, AB - Three main rules for success in the real estate market are said to be: location, location, location. And that same maxim could also apply to the dramatic success of Grant Metal Products Ltd., a custom manufacturer of sheet metal products for the construction, glazing, and signage industries, which found itself in the middle of the construction boom in Calgary, AL.

Grant Metal was founded by Bill Grant and his wife Jean in 1980. Through the years, the company has evolved to become the supplier of choice for a growing list of customers who require high quality, consistent precision-made sheet metal components in British Columbia, Alberta, Saskatchewan, Manitoba, and customers who supply products around the world. During this time, the company has grown from three to 22 employees and today is housed in a facility that provides 31,000 sq. ft. for production, equipment operation, storage, and project management. Grant Metal fabricates mainly light gauge material for its customers – everything from 26 gauge to 1/4 in. steel, aluminum, copper, brass, and stainless steel.

The company attributes its continued growth to its ability to respond to new business opportunities and the willingness to try new things. "We have continually diversified our services," explains General Manager John Reitmeier.

"At one time all we produced was metal building flashing. Then we began servicing the glazing industry and then the sign industry.

Feature Fabricating/Forming

Today, we even supply sheet metal parts to a company that builds theater sets that have been used in performance such as Phantom of the Opera, Showboat, and others."

While slow, steady growth has been the foundation of Grant Metal's success, the realities of today's market are evident in the company's changing philosophy. "The entire building industry is a big part of our business," states Reitmeier. "With the explosive growth of the construction market in Western Canada, we've never been so busy." This dramatic increase in demand for higher productivity and quality, coupled with the increasingly difficult task of finding labor in Alberta, has driven the search for automation in new equipment procurement.

The Shear Genius has provided Grant Metal with a variety of benefits including increased speed, accuracy, and productivity.

A good example of this new emphasis on automation was the company's rapidly increasing need for faster and more cost-efficient punching. For many years, Grant Metal had used a strip punching system to handle its punching needs. "While this system was very slow and labor intensive, punching was not a big part of our business," explains Reitmeier. "However, over the last few years, the amount of punching increased so much that we had to find a more productive punching method."

After attending several trade shows in Canada and the United States, the company looked at three types of machines, including a water jet, a laser, and punch centers. After evaluating the equipment, the firm purchased the Finn-Power Shear Genius flexible manufacturing cell (FMC). It was installed and operational in January, 2006. "We decided not to buy used or an entry level punch center," says Reitmeier. "We wanted to purchase the best equipment available." With the Shear Genius concept, the objective is to provide one 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.

The Shear Genius does this in less floor space–approximately 32 ft. x 72 ft. (10m x 23m) of space to fabricate 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 manual labor while increasing profitabity.

Shear Genius functions with sophisticated simplicity, able to perform the most demanding jobs with minimal set-up times and "lights out" operation. The Shear Genius increases material productivity through efficient and versatile nesting programs. The level of automation can be customized through Finn-Power's flexible modular solutions for raw material storage, loading, unloading, sorting and stacking.

The Shear Genius ease of operation does not compromise the cell's per minute part production, flexibility, or ability to fabricate complex parts. On average, Shear Genius reduces total manufacturing time by 60%.

Reitmer explains that with the old strip center system, there were many wasted man hours with the various stages of production including: manually moving the large sheets to the shear; shearing the large sheet to smaller blanks; manually moving the blanks to the press and setting up the punch manually; individually punching each piece manually; and manually unloading the blanks from the press.

By contrast, the steps with the Shear Genius FMC are reduced to: automatically loading full-sized sheets; nesting the sheet with the NC Express software; and automatically punching/shearing/unloading/stacking.

The Shear Genius eliminates wasteful skeletons and costly secondary operations such as deburring. Nibble edges on the part exteriors were 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 Shear Genius 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-all in one operation.

According to Reitmeier, the benefits of the Shear Genius to Grant Metal include increased speed, increased accuracy, increased product lines to more elaborate products, and the potential for new markets such as small part brackets and heavier material products.

"There is a definite labor saving as well, since we are no longer having to pre-shear or go through all the previous manual steps," says Reitmeier. "We've used the SG in a lights out application where we've loaded it and gone home and it is ready for us the next morning. We are now using it for repeat orders-we just pull the file and run the job. In the first five months, the Shear Genius has improved our production at least 20%. We expect it to do even better as our operators become more familiar with the machine."

Other benefits of the Shear Genius includes the fact that Finn-Power incorporates an individual tool holder concept that allows customers to design their own turret layouts.

Secondly, Finn-Power's unique auto-index system precisely rotates the punch and die in their tool holders using a single A.C. servo-motor system. The system does not need to match separate servo-motors as in some other machines. Rotation in .001° programmable increments gives the machine the ability to rotate beyond 360°, thus allowing the system to automatically select the shortest path to rotate to a programmed angle input into the NC part program with simplicity, speed, and reliability. Grant Metal has five full tonnage auto index stations-two 1.5 in. and three 3.5in. sizes.

Another key benefit for Grant Metal is Finn-Power's Multi-Tool stations which increase the number of tools available in a turret, thus reducing set-up and increasing productivity. The Multi-Tool system allows multiple tools to be put in one station. Finn-Power Multi-Tool offers 6, 8, 10, or 24 different punch/die combinations in only one station-a turret within a turret. Grant Metal Products has three Multi-Tool stations. As well, Finn-Power's upward forming option provides more accurate forming and greater forming heights up to .63 in. (16 mm) and 5 in. in diameter.

Another advantage is that all dies are at the same height and there are more high-forming dies in the turret, thus, reducing risk of material damage and increasing machine uptime. "The Multi-Tools and auto index stations are important because we are doing a lot of small pieces out of the same sheet with a large quantity of different holes and shapes and many directional and angular notches," explains Reitmeier. "We like the modularity of the Finn-Power equipment. You can start with a very basic machine and keep adding to it. We can tie things together so that one piece is feeding another. I can see in a long range plan where we can have four or five pieces of automated equipment doing the production work on a regular basis. In the future, we may be looking at the automated benders or robotic press brakes in order to keep up with the output from the Shear Genius."


The Shear Genius eliminates wasteful skeletons and costly secondary operations such as deburring.

This article was supplied by Finn-Power International Inc., Schaumburg, IL.