



FULL-SIZE SHEETS TO FINISHED PARTS



**Fabrication
Flexibility
in a Changing
Marketplace**

UPTIME LEVELS HAVE REACHED AN AMAZING 94% ON THE SHEAR GENIUS...



With the Shear Genius concept, the objective is to provide a machine capable of transforming a full-size sheet into finished parts. These parts can be moved to the final production stages for immediate integration directly into the final product assembly.



A changing lighting market led to a recent search for more flexible sheet metal fabricating equipment for a Canadian company. Peerless Electric Company Ltd., Montreal, Quebec, specializes in the manufacture and supply of lighting fixtures for the commercial, industrial, and institutional markets. Since its creation in 1939, Peerless has constantly changed to meet the needs of its customers. However, according to Peerless vice president Barry Fagen, today's challenges of increased competition combined with short lead times for its "custom" product lines, created an urgent need to closely analyze and modify the company's manufacturing operations.

"The bidding process and manufacturing realities of the lighting industry have changed dramatically during the 1990s," explains Fagen. "Approximately 60% of the products Peerless manufactures are custom made and do not appear in our catalog. When a bid for lighting is received, we immediately work with engineers and architects to design lighting for applications that will provide the proper lighting in the most energy-efficient manner. In prior years, we sometimes had a year to produce our products and meet our delivery dates. Today it is more like 6-8 weeks."

Fagen explains that until recently, Peerless had an older production mentality. "We would buy our sheet metal cut to size or shear it into blanks at our facility. We had two turret punch presses and would feed each sheet individually and then stack them for secondary operations. With the various levels of manual labor – shearing, loading, unloading, bending, etc. – production was slow and unpredictable. We made the decision to look for ways to improve and become more flexible in our sheet metal fabrication."

After purchasing a coil punching line at the Euro-Blech trade show in 2000, Fagen returned to Hanover in 2002 with his company's operations manager Marcel Reweghs to search for the latest sheet metal fabrication technology. Soon they discovered Shear Genius – an hydraulic turret punch press/integrated right angle shear combination Flexible Manufacturing Cell – at the Finn-Power booth.

With the Shear Genius concept, the objective is to provide a machine capable of transforming a full-size sheet into finished parts. These parts can be moved to the final production stages for immediate integration directly into the final product assembly. The Finn-Power Shear Genius accomplished this in less floor space – approximately 9 meters of space to fabricate raw material into finished parts on one machine.

The Shear Genius is able to perform the most demanding jobs with minimal set-up times and "lights out" unmanned operations. Shear Genius increases material productivity through efficient and versatile nesting programs. As loading, punching/forming & upforming, unloading, sorting, and stacking become automated, the result is a finished part with a dramatic reduction in scrap and manual labor while increasing productivity.

Other benefits of the Shear Genius include:

Tool Holders – Finn-Power incorporates an individual tool holder concept that allows customers to design their own turret layouts. Unlike other designs, specific tool stations are not machined into the turret. Finn-Power offers the only flexible selection of tool holders in the industry. Any tooling style from Mate Precision Tooling or Wilson Tool International can be installed in a Finn-Power turret. Up to 10 auto-index, forming, or Multi-Tool® stations may be installed in a Finn-Power turret.

Auto-Index – 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 degree programmable increments gives the machine the ability to rotate beyond 360 degrees, 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. Peerless has four auto index stations.

Multi-Tool® – Finn-Power’s Multi-Tool stations 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. Using a 40 station alpha/numeric Multi-Tool part identification programs are fast and easily done. Peerless has an 8-station, a 10-station, and a 24-station Multi-Tools.

Upward Forming System – Finn-Power’s upward forming option provides more accurate forming and greater forming heights up to 16 mm (.63") and 5" 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 level of automation can be customized through Finn-Power flexible modular solutions for raw material storage, loading, unloading, sorting, and stacking. These features can be added later as budget allows and production demands increase.

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, the Finn-Power Shear Genius reduces total manufacturing time by 60% and saves one blank sheet out of every 10.

The Shear Genius FMC breaks the barriers of the average flexible manufacturing cell to create a “smart cell”...one that offers a combination of benefits. Shear Genius is more than just a turret and shear performing linear operations. It is designed and synchronized to achieve high fabrication production and unprecedented speeds

Fagen purchased the Finn-Power Shear Genius and it was installed in March 2003. At the same time, he also purchased the Finn-Power Express Bender. The Express Bender automates complex bending and reduces tedious and costly work stages. It fully automates the operation cycle - from loading the sheet to unloading the bent parts. The sheet is loaded automatically onto the work table by a robot where a manipulator pushes against the positioning pins. The manipulator holds the work piece firmly during all the manipulation phases. The Express Bender enhances productivity by bending extremely high-quality parts in an unmanned environment in any quantities. Sheet sizes and part complexity can vary greatly with a machine capacity up to 11 gauge.

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.

Shear Genius also eliminates the potential of mistakes when manually shearing a large sheet. In the Shear Genius, the sheet is loaded and squared automatically, and there is no human

Barry Fagen, vice president (right) and operations manager Marcel Reweghs chose the Finn-Power Shear Genius FMC and Express Bender after searching for the latest technology in the sheet metal fabrication industry.



“WE PURCHASED THE SHEAR GENIUS AND EXPRESS BENDER TO FACILITATE OUR JUST IN TIME (JIT) PRODUCTION...”



The Finn-Power Express Bender enhances productivity by bending extremely high-quality parts in an unmanned environment in any quantities. Sheet sizes and part complexity can vary greatly with a machine capacity up to 11 gauge.





Members of the Peerless Electric management team include (from left to right) Joseph Aliberti, president; Barry Fagen, vice president; Francine Samuels, vice president; and Luis Picanco, national sales manager.

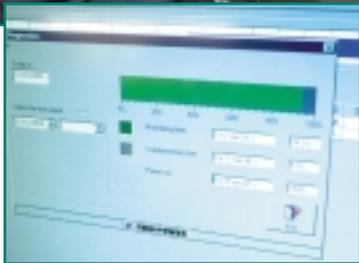
interference, ensuring very accurate parts. In fact, the same clamps that hold the sheet for punching also hold it for shearing. In essence, the Shear Genius allows the automated process to begin with a full-sized sheet of material and end with a finished part after automated loading, punching, forming, shearing, and unloading – all in one operation.

“We purchased the Shear Genius and Express Bender to facilitate our Just in Time (JIT) production and to eliminate the levels of our work in process (WIP) inventories,” says Fagen. “Today, the majority of our custom products are fabricated on the Shear Genius. Each month, we are also forming more products on the Express Bender.”



The Shear Genius operates three shifts, 24/7. In order to keep the cell running under this demanding schedule, from the time the Shear Genius was installed, Peerless has made proper tool and machine maintenance a top priority. Each Saturday, Quan Wang

Yang, operator of the Shear Genius, spends the morning sharpening tools and carefully following the prescribed maintenance procedures of oiling, greasing,



cleaning, etc. But Yang takes his concern and dedication to another level. He meticulously removes the punched slugs by hand. “When you use an air hose to dislodge the slugs,” explains Yang, “who know where the slugs are scattered? By removing them by hand, I know they can do no damage to the Shear Genius.” This dedication has paid handsome dividends for Peerless. Uptime levels have reached an amazing 94% on the Shear Genius.

In addition to adding equipment, Peerless had to retrain its personnel to think “outside the box” in terms of redesigning products in order to make them more efficient with the same or higher quality. For example, a fixture is comprised of four basic elements:

“WITH THE FINN-POWER SHEAR GENIUS AND EXPRESS BENDER WE NOW TRULY HAVE FLEXIBILITY...”

a body or channel, end covers, socket brackets, and a ballast cover. “Our Gymnasium line requires punching, bending, and then spot welding these parts together,” explains Fagen. “It would take two people a day to produce a total of 40 parts. By contrast, with the Shear Genius and Express Bender, we have redesigned the unit to be comprised of one piece, and this allows us to produce 120 units per 8-hour shift with only one person. That is a substantial savings.

“With the Finn-Power Shear Genius and Express Bender we now truly have flexibility and are able to provide better customer service, shorter lead times, and higher quality. We can provide it faster and better than before.”

The Finn-Power Shear Genius and Express Bender has allowed Peerless to redesign some of its products for enhanced quality and material utilization and increased cost efficiencies.



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