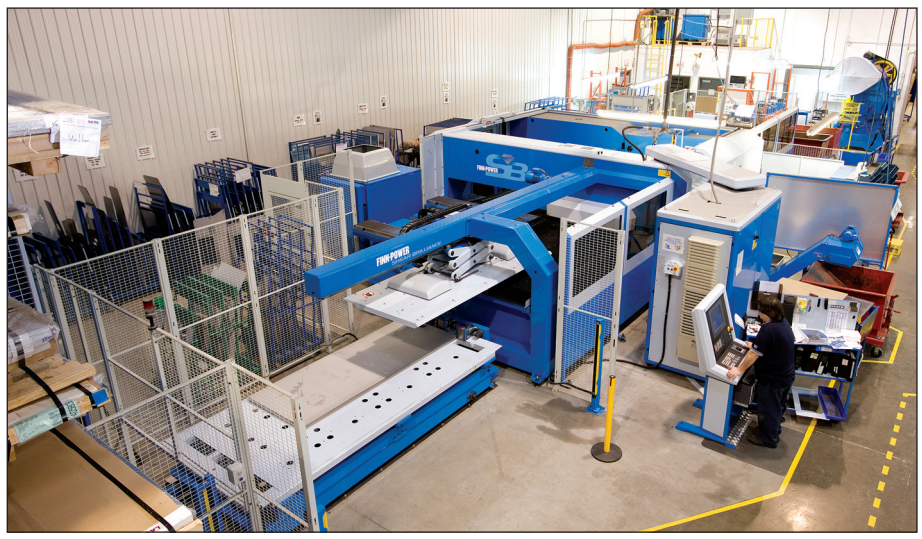
Venmar meets productivity and scrap reduction goals with Shear Brilliance

The dual goals of increasing productivity and reducing scrap due to defects during the fabrication process recently spurred Venmar Ventilation (H.D.H) Inc., Drummondville, QC on a search for fabricating technology that would meet those goals.

"We were looking for a machine that could take a full-sized sheet, punch it, shear it, and make finished parts," says Eric Therrien, production and project engineer with Venmar.

"We didn't want to stay with the process of 'shake and break.' We were cutting blanks on the shear and then putting the blanks on the standalone turret punch presses. Because of the amount of handling, dents and scratches were always a possibility. Our goal was to reduce this damage as much as possible," he explains.



Installing the Shear Brilliance Flexible Manufacturing Cell enabled Venmar to increase production by 50% in 2004.

Subsequently, in 2003, Venmar began a search for fabrication equipment to process its stainless steel products. The company was using a shear to make blanks for two standalone turret punch press.

Venmar was founded in 1978 as a roof ventilation distributor for pre-fabricated and mobile homes. Today, Venmar is a division within the Broan-NuTone Group, the largest division of Nortek. With over one million homeowners among its customers, Venmar continues to manufacture a full range of products including kitchen range hoods, attic ventilators, and filtration and ventilation systems.

The Drummondville plant specializes in the production of kitchen hoods, specifically the professional style hoods. The hoods are mostly produced from stainless steel and are low volume, high mix. There are several hundred different models of hoods with more than 100 different options. Each year, the plant produces tens of thousands of kitchen hoods for the North American market.

After a thorough search, Venmar chose the Shear Brilliance Flexible Manufacturing Cell supplied by Finn-Power International Inc., Schaumburg, IL (finnpower.com). The Shear Brilliance represents a new generation machine to provide the fastest path in fabricating sheet metal parts. The combination of a 6,400 mm X traverse, four clamps, and the high positioning speed provided by linear drives means that more functions-punching, forming, tapping, bar coding, and shearing-can be performed as a single, multi-purpose sheet metal fabrication center with a single clamping. This saves time and increases accuracy, since repositioning is not needed during the process and the same clamps that are used for punching are also used for shearing. Utilizing one machine for the various processes also protects the part from defects during production.

"We run 20-24 ga stainless steel and need the parts to be perfect," says Therrien. "Cosmetics are crucial for our professional style stainless range hoods. Any small defects, such as a dent or scratch, could be reason for rejection of the production. It was very important to find a machine that could have all these functions in one process to produce excellent parts with minimum scrap."

Speed, accuracy, and precision are achieved by both the linear drives and the coordinate table construction, ensuring excellent repeatability of each work stage performed. This Active Synchronized Drive system ensures the highest positioning accuracy of the coordinate table, even when using maximum acceleration and deceleration values.

However, faster punching speeds alone is not the total answer to increased productivity. Finn-Power found the greatest potential area for productivity improvement in total manufacturing time to be in the areas of axes movements. Depending upon the program, axes movements in typical fabrication systems can account for 50% of total processing time from loading the sheet to stacking the finished part. The X and Y axes movements are the most time consuming phase of the program. Finn-Power Shear Brilliance utilizes linear drive technology with the integrated shearing concept, surpassing all performance values previously associated with traditional methods.

Other benefits of the Shear Brilliance include the machine's 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.

The Shear Brilliance turret has 30 tool stations. Up to 15 Multi-Tool or auto index stations can accommodate up to 200 tools available in the turret in one set-up. "One of the justifications for purchasing the Shear Brilliance was reduction of set up times," says Therrien. "We only had 19 tools in each of our two turret punch presses. We have 94 tools in the Shear Brilliance and have reduced setup times from 35% to only 8%. This is a big advantage for us."

Another key feature on the Shear Brilliance is Finn-Power's auto-index system which precisely rotates the punch and die in their tool holders using a single A.C. servo-motor system. 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. Finn-Power's Multi-Tool stations is another critical feature. Multi-Tool increases the number of tools available in a turret, thus reducing set-up and increasing productivity. Venmar has two 8-stations, three 10-stations, and one 24-station Multi-Tools.

Other features include the upward forming system which provides more accurate forming and greater forming heights up to .63 in. and 5 in. in diameter and FPS storage which allows the level of automation to be customized through Finn-Power flexible modular solutions for raw material storage, loading, unloading, sorting, and stacking. Venmar chose the FPS double storage towers

"Since we are running very low volume and high mix, it made sense for us to go with an automated loading tower," explains Therrien. Venmar is currently operating two shifts, seven days a week. The Shear Brilliance is running unmanned part of this time.

"During 2004, we increased production by 50%," says Therrien. "Overall, the Shear Brilliance has increased our capacity by 300%, while reducing our cost of manufacturing the part by 75%."

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