

European Fab Shops Profit With Automation

By John Mullally, Editor

‘Old World Craftsmanship’ used to be both the calling card and trump card of European manufacturing. Today, the quality remains, but automation has been the essential in maintaining Europe’s manufacturing base.

On a recent tour of several manufacturing facilities in Europe, as a guest of Finn-Power International, Inc. (Schaumburg, IL), it quickly became apparent that companies in Europe face some unique challenges compared to those of U.S. firms, and that these firms have found that process automation is the best method to overcome those challenges.

This is not to imply that that European manufacturing’s hurdles are any higher than those for U.S. shops, just different, but the end result is the same – a difficult climate in which to do profitable business. Like U.S. shops, China looms large as a competitor for Europe. Shops on the continent also face lower cost labor from many of the former Soviet Republics, now free to flex their own economic muscle and formidable manufacturing talents as free economy competitors.

Major regulatory differences and taxation schemes face these operations. The bureaucrats of the European Union (EU) seem to see their job as generating new economic, environmental, energy conservation and trade regulation daily. Some U.S. manufacturers can successfully argue that the EU sounds a lot like the U.S. government.

This may be true, because the European shops are using the same approach as U.S. shops to make a profit. They have automated.

Monthly, the articles in MAN – Modern Applications News stress the need to automate operations as the best way to survive and thrive. The fabricating operations toured in Europe reinforce this view.

Niche vs. Commodity

Although some have found highly specialized niches with complex operations, others have found success producing extremely simple, almost commodity products, but with great efficiency.

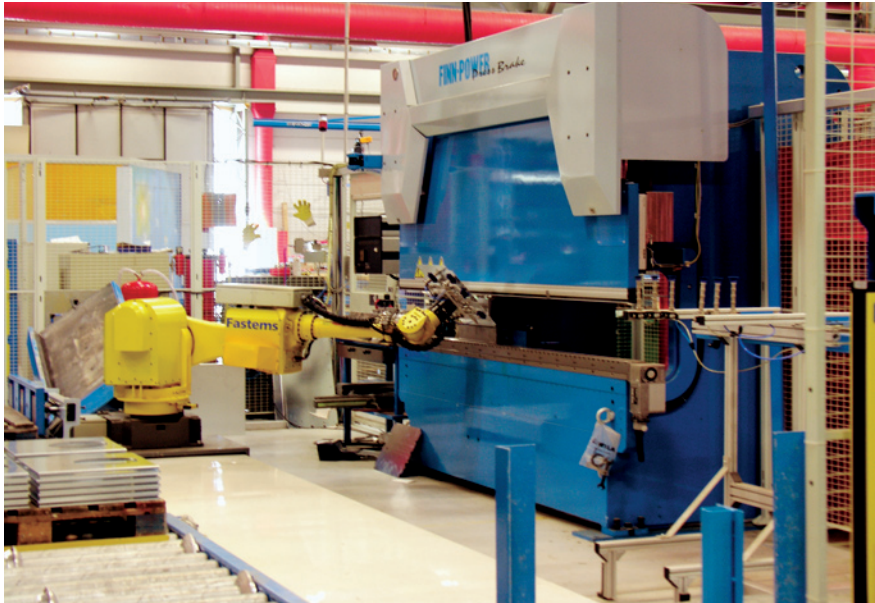
One company that has divisions producing both types of products is Finland’s Halton Group.

Halton Indoors specializes in fabrication of environmental air-handling products for air distribution, airflow management and fire safety. At its Kausala, Finland plant, it fabricates mainly 22 ga. pre-coated sheet steel. The raw material is stored and automatically fed from a computer-controlled Finn-Power Night Train flexible manufacturing system (FMS).

This system automatically feeds the operation’s two primary pieces of equipment, a Finn-Power Shear Genius, a high-speed shear and tur-



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Robotic press brakes provide unmanned bending that produce exceptionally consistent parts and can be integrated into flexible manufacturing cells and systems.

ret punch press with automatic load/unload, and an Express Bender cell. The accuracy of the shearing operations is critical because the mechanical interlocking seams that will be formed later must be airtight.

Halton's Express Bender is central to an unusually automated work cell. The bender is fed via robot, which provides very close tolerance capabilities and unusually demanding bends. Tolerances are held to +/- 0.1 mm per bending action. This cell is also capable of forming very large radius bends, some requiring up to 50 individual bends. These would be impossible to achieve manually.

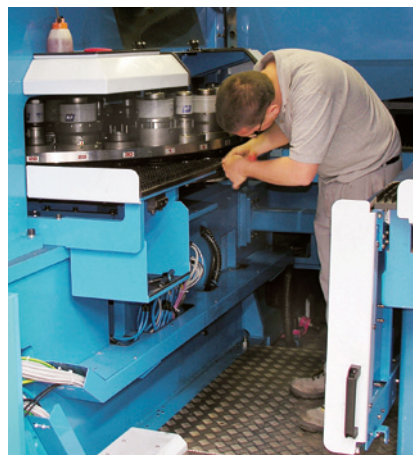
All new bending programs are slowly stepped-through and observed by a machine mounted vision system that eliminates potential production crashes.

Combining the capabilities of the shear and the robot-tended bender has provided an unusually high level of efficiency, notes Markus Helineva, manager, production development, Halton Indoor. Throughout the entire Halton process, he notes, the raw material and work in process are never touched by a human. Also, the precise control of the shearing and bending have allowed some product redesign to take full advantage of the manufacturing capability. A fire damper for building

air handling systems was originally formed from 48 individually sheared and bent pieces. Now, that damper is a one-piece unit.

At Halton's Marine products operation, virtually every product is a custom piece, as it produces stainless galley and cabin ventilation systems for installation onboard ships, primarily cruise ships.

This operation is even more automated than the Indoor facility. According to a Halton spokesman, the primary



Adjusting tooling in the turret of a Shear Genius punch/shear is about the only human involvement in the forming operations of Eurosteel (Parma, Italy).

driver for ever-increasing automation in this plant is the cost of raw material – stainless steel. Working in stainless up to 5 mm thick, this plant teams a Finn-Power Shear Brilliance combination shear/punch/laser with a robot-fed Express bender work cell.

The Shear Brilliance delivers the cutting power of a 4 kW nitrogen-assist gas laser, with punching, forming, tapping and shearing capabilities. To maximize production speed, this unit also features linear drives.

To realize the rapid throughput capabilities of its individual machines and cells, Halton Marine employs AGV forklifts for material transfer, allowing complete lights-out manufacturing.

Short-Run Manufacturing

Another Finnish operation focuses on the extremely competitive and demanding short-run contract-manufacturing sector. To succeed in this, according to managers at Incap Corporation (Helsinki), high throughput equipment is essential, but it must be closely teamed with a full pallet of other manufacturing disciplines to succeed.

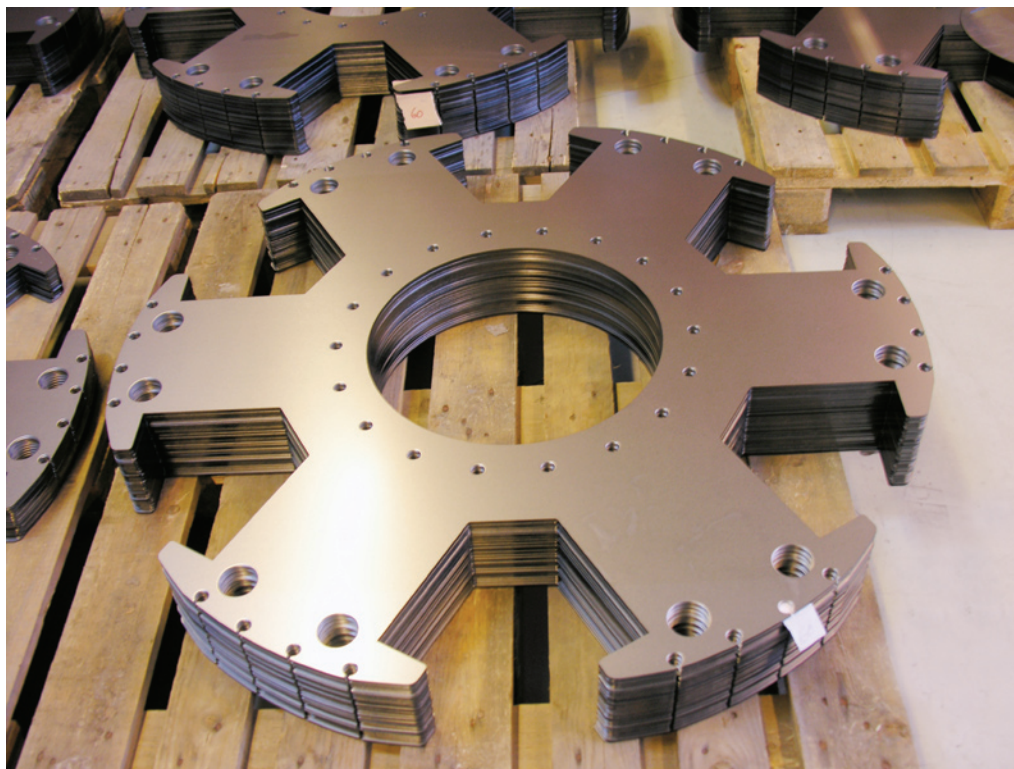
The services it provides include product design, prototyping, sheet metal mechanics, electronics manufacturing, final assembly/testing, logistics and after sales service. Bundled, these serve as a complete production capability for companies where the core strength is marketing and sales.

Incap managers stress that the essential element in this is speed to market. How quickly can the product be in the customers' hands from the time it is first conceived?

The company's internal product designers help the effort by designing for manufacturing. One of their favorite tools, because of design flexibility and speed, is a compact-design Finn-Power L6 laser with linear drives, a 4kW laser with built-in resonator and standard CNC package.

The designers and manufacturing engineers point to this laser as key to short-run, fast delivery because of its operating speed and no need for tooling.

Also building a solid business on rapid response is Oy Laine-Yuotano AB (Vaasa, Finland). Laine managers note that their normal cycle is two weeks



Part of a short-run electric motor project at Incap (Helsinki), this piece was designed for manufacturing to be laser cut with no tooling or fixturing.

from order to shipment. It makes a variety of fabricated products mainly for ABB, that usually account to only 500 – 600 units per year for fabrications such as large motor housings, heat exchangers and large electrical cabinets.

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Laine brings a very clear focus to the concept of lean manufacturing. Employing a Finn-Power Night Train FMS to feed a laser cutter and laser punch machines, there is only one manufacturing employee per shift for this entire operation, which uses about 1.7 kilotons of steel annually.

A series of manned Finn-Power CNC press brakes finish the forming, which goes on to final welding and QC for shipment.

Italian Innovation

Italian fabricators, from OEMs to short-run contract manufacturers, are also automating their processes to remain

competitive. Here, FMS has also found fertile ground because of high labor rates and the ability to speed product throughput.

Producing a variety of electrical cabinets on-demand, EuroSteel (Parma, Italy) took its first major technology step in 2004 with the purchase of a Shear Brilliance laser for use on 0.6 mm – 1.5 mm cold-rolled steel. Previously, the operation had used sub-contractors for laser cutting.

This laser cutter was bought as a stand-alone machine to help automate low volume product runs and allow easy customization when required. EuroSteel quickly saw the value of the machine as designs cut on it swelled to more than 1,500 with customers designing specifically for the abilities of the machine.

The attraction of technology grew with the increasing

business. Today EuroSteel employs a 100 cassette Night Train FMS, feeding two Shear Brilliance lasers, two Shear Genius shear/turret punch presses and fully automated Express Benders.

A 300 cassette Finn-Power FMS is used by Parma's Ilinox company to hold its 1.2 mm – 3 mm stainless raw material and also skeleton scrap. About 60% of the capacity holds raw materials. Ilinox specializes in contract manufacturing low volume specialty stainless steel cabinetry, primarily for the medical laboratory and pharmaceutical industries.

The FMS forms the core of Ilinox's automation. The FMS supplies a laser/punch and an Express bender. The shop has a variety of heavy brakes and benders, but the Finn-Power equipment is the core of its automation, allowing it to produce a full 24 hours per day, with two manned shifts and one unmanned. The personnel required for the manned shifts of the cell are one programmer and one material handler.

Automation Excels

Operating a successful (profitable) fabrication business in the U.S. is tough, no doubt about it. However, Europe has led the U.S. in restrictive regulation and higher taxation. To be a profitable fabricator in Europe, automation is the only way to go.

It's also the only way to go in the U.S. *Finn-Power International*