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Fiber Laser Cultivates Design Creativity

**The Brains and Brawn
of Die-Design Software**

Creative Conveying

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Automation**

**Coil Straightening—
The Basics**



ECCO installed its laser-cutting machine in August, 2011. The machine has a 120- by 60-in. worktable and a 6-in. z axis. Its unique architecture allows full accessibility to the working area from three sides.

Fiber Laser Makes the Cut at HVAC Manufacturer

From its founding in 1960 in the back of a garage in northern Alberta, Canada, ECCO Manufacturing has evolved into one of North America's largest manufacturers of HVAC sheetmetal products. The company employs approximately 600, who work out of a combined 500,000 sq. ft. of manufacturing and distribution space in facilities in Langley, British Columbia, Calgary, Alberta, and Kent, WA.

ECCO manufactures HVAC products—pipe, duct, boots, elbows, and fittings—for commercial and residential installations. It fabricates ferrous and nonferrous materials from 30 to 10 gauge, to create highly engineered products in rectangular, round, flat oval or other shapes. From initial estimate to completed job, it assists its customers in coordination, fabrication and shipping of everything from mass-produced quantities to custom OEM products.

New Plant, New Fiber Laser

In 2010, the ECCO Calgary facility moved to a new manufacturing plant

and distribution center, comprising 7 acres under one roof. Shortly after it moved in, the plant welcomed a new fiber-laser cutting machine—a Platino 2D flat-sheet and plate processing machine from Prima Power. The laser purchase culminated a long and thoughtful equipment-decision process, says David Mackay, assistant plant manager.

"The process started back in 2008," recalls Mackay, "when we were quoting on a fairly large and cost-sensitive job. We did some investigating and discovered that on some high-volume items, we could save as much as five or six percent per part by using laser cutting rather than band-saw cutting. That prompted our initial and serious discussions about purchasing a laser."

Mackay explains that prior to purchasing the Platino fiber laser, the ECCO facility produced most of its contoured parts on its five vertical band saws. "We still perform stack cutting of the contours on the band saws, after shearing the material to the blank size we need,"

notes Mackay. "We also have punch presses, but our thin-gauge material is a challenge for the presses. With a punch press, the clamps that hold the material and shift it side to side and front and backs can cause the material to buckle. To avoid buckling, we have to slow the punch press down. Cutting on the laser, the material remains stationary while the cutting head moves—no worries about buckling."

Why a fiber laser?

"During our research," says Mackay, "we became sold on the fiber laser. We learned that the machines have fewer consumables than CO₂ laser-cutting machines, that the technology is perfect for cutting thin material, and that we can use our shop air for cutting purposes, eliminating the need for oxygen or nitrogen. Including costs for all of the consumables, power and other operating costs, we have seen quotes of \$15/hr. for operating a comparable CO₂ laser (excluding labor), compared to \$5/hr. with a fiberoptic laser."



ECCO finds that the accuracy and the small cut width of the fiber-laser beam is so fine that it's been able to be more creative in how it designs its products, including the use of tabs. And, being able to round the corners of the tabs means that installers have less chance of cutting themselves.



Convinced it Made the Correct Choice

ECCO installed its laser-cutting machine in August, 2011. The machine has a 120- by 60-in. worktable and a 6-in. z axis, and its unique architecture allows full accessibility to the working area from three sides. Further, its optical setup allows cutting all materials and thicknesses with one lens, so that production changes can be made without interruptions for lens changes.

"We also like the basic drive system of the machine," adds Mackay. "And, Prima Power has a service technician in the Alberta area, which no other supplier has. The machine has been operating well, with cutting speed from 1200 to 1500 in./min. And while we're not primarily a precision manufacturer, the small cut width of the beam is so fine that we've been able to be more creative in how we design our products, including the use of tabs and the ability to add inside features.

"As we have continued to research

The Platino's pallet changer enables ECCO to swap out sheets in 20 or 30 sec., "significantly quicker than with other systems," says Mackay, noting that the quick changeover maximizes beam-on time and reduces idle time.

lasers, we're sure that we made the right choice for our company," continues Mackay. "We make so many different products here, from large part lots of 3000 to as little as 20 at a time. Before the laser, many of our products had to run through circle shears and drill presses. Setting up multiple machines creates numerous inefficiencies. Now, laser cutting allows us to eliminate as many as three or four operations depending on the part."

Additional hidden costs also have been eliminated, due to streamlining its assembly processes. "When using

band saws to cut our parts," Mackay says, "we'd experience inconsistencies between blank stacks. As a result, we had to make minor yet time-consuming changes to our assembly setups. The fiber laser has eliminated these inconsistencies, optimizing productivity."

Other benefits noted by Mackay: improved material utilization, faster assembly and superior part quality. "The ability to add value-added features, such as rounding the corners on tabs, means that installers have less chance of cutting themselves," he says.

Automation

ECCO equipped its Platino machine with an automatic pallet changer, featuring automatic speed adjustment based on sheet weight, and drawers for efficient scrap collection. Mackay notes particular appreciation for the setup's efficient pallet swap time.

"Since we are a production manufacturer, we run through several sheets per production run," he says. "We're able to swap out sheets in 20 or 30 sec., significantly quicker than other systems which, we learned, take 50 sec. to a full minute to swap out sheets. That's a big deal. We're eliminating a considerable amount of idle time, so that the machine spends more time cutting."

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