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Unlimited options

With three **Omax** 80160 JetMachining Centers, cutting possibilities abound at **Pal-Con Ltd.**

BY LISA RUMMLER

Until about two years ago, Pal-Con Ltd., Stephensville, Texas, serviced and rebuilt regenerators for the natural gas and electrical industries.

In 2007, though, following a move into a 75,000-square-foot, state-of-the-art manufacturing facility, the family-owned company took its business a step further and began manufacturing the Pal-Tex Regenerator in house.

"It's a big heat exchanger," says Randy Thompson, COO at Pal-Con. "It looks kind of like a radiator on steroids, and it has fins [made] of a thin material."

These components are made of 0.015-inch 409 stainless, and they have high spots and low spots, which presented challenges in terms of being able to cut them properly.

"You can't use a plasma or a laser or anything like that because the highs and lows are so different," says Thompson. "With a laser, the problem is that when it goes across a high spot, that's what it picks up, and then when it goes to the low spot, the laser's sensor can't pick it up, so it shuts off because it thinks there's no material there. We also needed something that didn't have a heat-affected zone."

These were the driving forces behind Pal-Con's decision to purchase a waterjet. The company ultimately decided to go with a 40-horsepower 80160 JetMachining Center from Omax Corp., Kent, Wash.

Pal-Con purchased the first precision abrasive waterjet system in February 2008. A few months later, in April 2008, the company purchased a second one. Less than a year later, in about January 2009, it purchased its third 80160 JetMachining Center.

"We're a company that's growing leaps and bounds, and I look for us to buy more of these in the future," says Thompson. "And we'll definitely go with the Omax over anything else."

The 80160 JetMachining Center is geared toward larger parts or multiple parts from large stock up to 6 feet by 12 feet, and provides various cutting speeds based on the material, material thickness and the quality of the cut.

It has X-Y travel of 80 inches by 160 inches with a motorized Z-axis, as well as a single Maxjet 5 Nozzle assembly, which includes all necessary high-pressure plumbing.

The machine also has a patented motion-control system that incorporates Windows XP software, a 600-pound abrasive hopper and an ultrahigh-pressure direct-drive pump.

Additionally, steel covers protect X-axis components on the 80160 JetMachining Center, and rapid water-level control enables submerged cutting.

Running the gamut

Kimball Smith, senior regional sales manager at Omax, says the 80160 JetMachining Center uses garnet in a stream of high-pressure water to perform the actual cutting and that the machine can handle a wide range of material.

"The beauty of an abrasive waterjet is that it can cut virtually any type of material that you can get under the nozzle," says Smith. "It can cut steel, stainless steel, aluminum. It can cut high-strength steels, like T1 plate, or tool steels. It can cut titanium."

The type and thickness of a particular piece of material determine the rate at which the 80160 JetMachining Center can cut. And Omax's IntelliMax software makes the machine easy to use, Smith says.

"Our software is designed so that you can load the material and then go in and pick out the type of material you want to cut," he says. "Let's say you're cutting 1-inch-thick aluminum. You just go into the CAM portion of the program and put in '1-inch-thick aluminum,' and install the program, and you're ready to cut. It's that simple.

"Now, if you wanted to change out to steel, you would just go back and change it to 'steel' in the software, and the machine knows to slow

Omax's 80160 JetMachining Center can handle a wide range of material.

The 80160 JetMachining Center is designed for larger parts or multiple parts from large stock.

down to cut that steel a little bit slower than it cuts the aluminum. It's all preprogrammed in the software."

Additionally, Smith says Omax software engineers work daily on improving the software and that the company provides free software upgrades to its customers.

Lessons learned

Whenever a customer purchases an Omax machine, the company comes in and installs the machine, then it provides one week of training.

"Typically, if you're computer literate and you know another CAD system of any kind, you'll pick this up very quickly," says Smith. "I've seen people pick it up in two or three hours of working with it. There may be more to learn, but they can run the machine in just a couple hours of training."

The short learning curve for the majority of end users underscores the 80160 JetMachining Center's overall ease of use, according to Smith, who also says that is just one component of the machine's popularity.

"I constantly hear from shop owners that they have brought other pieces of equipment into the shop, and the guys aren't too excited about learning how to operate it because [they consider it to be just] another new piece of equipment," says Smith. "But with a waterjet, everybody wants to run the machine because everybody sees a use for it, and it's a fun technology. I've never seen it in a shop yet where everybody wasn't interested in how this thing works and what it does."

Opening doors

Along those lines, Thompson says his employees are always trying to get time on Pal-Con's 80160 JetMachining Centers.

"With anything else, when you cut material, you've got to do some cleaning up after you're done cutting it," he says. "With these machines, you cut it and put in right in, and you're done just like that."

Pal-Con is the only company that makes a regenerator with a plate fin, according to Thompson, and it has the second-largest hydrogen oven in the world.

"We'll cut all these pieces on the waterjet—there are 1,500 pieces in a core section—and then we stick these core section [pieces] in the hydrogen ovens and braze them," he says. "The whole time we're working, the waterjets are running. They're never sitting there idle."

But given the positive experience Pal-Con has had with the waterjets, the company has branched out and used them for work for which they were not originally intended.

"We bought them for one purpose, but seeing how they're so versatile, accurate and really easy to operate, they've made the cutting torch, the plasma and everything we've got here as far cutting stuff obsolete," says Thompson. "Another reason we started using it to cut other stuff like gussets and structural steel shapes was it actually cut down on our fabrication time because the stuff was so accurate that when you put a gusset in a beam, you didn't have to worry about leveling it because it would only go in there one way because it was so perfectly cut."

Additionally, the 80160 JetMachining Centers have allowed Pal-Con to cut down on the amount of work it outsources.

"The waterjets have given us the ability to make stuff that we would've had to outsource because we didn't have the equipment to roll stuff or punch certain things," says Thompson. "We don't have to roll or punch them—we cut them on the waterjet now. It's also helped us in our R&D because if we have an idea and want to try it, we can just put it on the waterjet, cut it and see how it works out." ■

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