The loader on Chrima's Trumpf TruLaser 7000 tube cutter, which can load a 28-foot pipe.

Clockwise from top left: Chrima's new two-bay welding cell; the BLM electric tube bender; and the TRUMPF TruLaser 7000 tube cutting machine.

Unique capabilities in tube cutting, bending and automated welding create growth opportunities for CHRIMA

By Rob Colman

Automation can be a huge investment for a company, one that has to be carefully planned. But once a company has made the investment, the returns can be impressive. Chrima (www.chrima.ca) is a shop that hasn't been shy about making smart investments in automation. In a tight market like theirs, it's proven essential.

Chrima is a family-run fabricating business based in Stratford, Ontario, serving primarily industrial OEMs. The company has remained competitive over the years in part by investing in time-saving, highly accurate equipment. Most recently, they've invested in three new systems: a TRUMPF TruLaser 7000 tube cutting machine, a BLM electric tube bending machine, and a two-bay Lincoln Electric welding cell. The combination has created a shop with unique capabilities that will make Chrima stand out from their local competitors.

Laser tube cutting

Chrima has been equipped with laser technology for a number of years. Working in carbon steel, alloys and aluminum, the company has three other lasers on the floor (besides the laser tube cutting system), including a two cutting machine automated cell that loads, unloads and sorts parts.

"The market in our area is so saturated with laser cutting right now that automation gives us a good edge to maintain our volume in that area," says Dan Christian, vice-president of Chrima.

The new Trumpf machine also includes automation in the form of a very large load/unload system. It can load 28 feet of pipe – the largest loader available for this type of system. It can unload 21 feet, and can handle material up to 10 in. in diameter. The system is also equipped with a tilt-head laser.

"The tilt head allows us to do things like beveled corners or create very close tolerance joints," says Christian. "A non-tilt head machine, a traditional tube laser would be a straight cut only, so there would be material thickness interference on tight profile corners. We watched the tube cutting technology mature and decided that this was the right time to invest.

"We are doing more tube work than we once did," Christian continues. "We were doing a lot of saw cutting and deburring on tube and structural steel components, so this investment is helping us reduce our turnaround time on certain products."

Tube bending

The BLM electric tube bending system is also an important investment for Chrima. "We do a lot of work in the all-terrain vehicle market, as well as rollover protection systems, which, of course, is all tubing," notes Christian. "We had been outsourcing all of our tube bending requirements, but the company we were outsourcing to, although quite good, had older technology and were not able to produce a finished part. With the electric tube bending machine and the tube cutting technology, we can bend a part and have it finished, with no trimming and all of the holes in it ahead of time. That creates a lot of time savings for us."

On the shop floor at Chrima

Click here in the digital edition, or visit **metalworkingcanada.com**, to watch a video of MP&P's visit to the Chrima shop floor.

The key for the tube bending is the tremendous accuracy of the new system.

"Electric bending is far more accurate than traditional hydraulic or hybrid bending, as well as being more cost-effective and energy efficient," notes Christian. "The bending equipment is equipped with hole detection, which is why we can profile all of our tubes ahead of time, including the holes, as long as the holes are not on the bend radius itself, and it can index the material based on the holes that are already in it. This is quite important on a round tube with bends at different axes. Also we have zero trim required on the tube bender, so no trimming has to be done – which is something we had to do with our subcontractors. And our first part is a correct part, thanks to our offline programming systems and engineering solutions."

Advanced automated welding

Like every other shop, Chrima has experienced challenges finding the right people for its team, particularly in its welding department.

"In the market we are in, reliability is huge, whether you are doing one part or 500."

However, Dan Christian says it hasn't been as big a problem over the past couple of years.

"Once we find our people we tend to keep them," he notes. "One fellow we have on our team will retire this year after being with us for more than 35 years. Many have been with us for more than 10."

Still, labour-saving technology is a key element in making any shop successful, and Chrima excels in such applications. In fact, the company's new welding cell is a good example of this. There are two particularly interesting aspects to the welding cell investment. Firstly, it is equipped with a Bluco modular fixturing system, and secondly, that investment allows the Chrima team to program welds offline.

"Basically, we can model the finished products in engineering," says Christian. "We already had models of the working space of the robot, and Bluco provided us with SolidWorks models of its fixturing systems, so engineering can build a program in virtual space of everything, which is quite new for robotic welding. It allows us to tackle smaller runs. For example, a medium-complexity part might have taken us a week to program using an older type of welding cell. Now, it might take as little as a few hours. And it can be done while other components are running on the machine."

As Christian says, he couldn't have gone with such a system if the accuracy wasn't everything he'd hoped. "In the market we are in, reliability is huge, whether you are doing one part or 500. With this new weld cell, customers are going to get faster, even more accurate throughput. This is simply a better mousetrap."

Programming is really key to the continued success of this company. Everything in the shop is programmed offline so that the guys on the shop floor can focus on simply getting things done rather than pressing more buttons. And Dan Christian hopes to continue perfecting throughput.

"Scheduling software is where I hope to put my energies this year," he notes. "We have it in-house now but really want to start using some of the more advanced features that we haven't adopted yet." MPP