### Plasma Technology

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# A new kind of twister hits Hickey Metal Fabrication

onotonous is a word rarely used to describe the work performed at fabrication shops across the states. No matter the outfit, new parts must be cost-efficiently and quickly produced on a daily basis.

Different part requests can blow in without notice, and therefore engineers and operators are expected to be on their toes at all times, ready to utilize their experience and the tools at their disposal. Nick Peters, vice president at Hickey Metal Fabrication, says for his particular fabrication shop, the new Twister TFP3051 fine plasma machine from Komatsu America Industries LLC keeps the crew churning out parts no matter what the order is.

Hickey's day-to-day activity fits the custom-fabrication description to a T. "We can basically make just about anything and everything that comes in the door," he explains. But tailormade jobs only add up to 25 percent of the company's portfolio. The remaining 75 percent to 80 percent is what Peters describes as blanket work, and a majority of that is producing parts for Miller Industries. Miller Industries makes tow trucks at two facilities located 50 miles from Hickey Metal, as well as at two other plants in Tennessee, and relies on the fabrication shop to make more than 5,000 parts for the vehicles' assembly. "We produce parts that go into the different models, anywhere from the slide bodies, to the 80-ton boom wreckers, to the multi-car trailers," he says. "We supply four assembly lines with all of the pieces and parts and weldments to put them together."

The range of parts that Hickey makes for its blanket work alone requires the company's machines to be in tip-top shape. So when Hickey's 90-amp Komatsu plasma cutter started showing signs of aging, Peters decided that the company was overdue for a new one.

#### The virtues of versatility

The Twister's 30kW fine-plasma torch, 5-ft.-by-10-ft. cutting surface, push-pull zoned exhaust system and mechanical spatter splash shield were top selling points for Peters, but the main function the company was after was the ability to cut aluminum plate up to  $\frac{5}{16}$  in. thick, stainless steel up to  $\frac{3}{16}$  in. thick and most importantly, 1-in.-thick carbon steel plate. Peters says that the company shopped around before finally purchasing the Twister.

"We looked at some other machines, but our relationship with Komatsu goes back over 13 years," he explains. "This is the fifth Komatsu that we have, and we've been very comfortable with how they work. They've always worked as good or better than what we were told." At times the Twister has performed functions that even the Komatsu company never would have expected.

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In addition to tearing through a variety of materials and thicknesses like a tornado through a trailer park—the new Twister can cut 1-in.-thick mild steel at 50 ipm, with a bevel angle less than 2 degrees and a pierce time of 1 sec.—the plasma machine was able to get Hickey Metal out of a major bind. Miller Industries needed the frame angles that mount its slide body wreckers, but the machine that was normally used to produce the parts was out of commission.

"One of the advantages of the Komatsu is that we've been able to take structural members, angle irons, beams and pipes, and make fixtures to put on the table or set down into the table," says Peters. "We can burn angles or structurals right on the table as opposed to only sheet and plate. We had an oxyfuel machine that always burned these parts out, but it broke down and we were waiting on parts. We were looking at the Twister and one of my operators said, 'I can do this.' Within two hours he had the jigs made and we were in production."

Peters notes that the Komatsu manufacturer was intrigued by the adaptation of the machine to burn more than just sheet and plate. "Necessity is definitely the mother of invention," he says.

#### Less is more

Since the arrival of the Komatsu fine plasma, the company has found itself in a position where its pre-existing laser machines make the perfect complement to the new plasma machine. With the Twister, higher speeds have been achieved, as well as less operating costs and lower maintenance, all the while giving Hickey Metal's customers a choice.

"We have two lasers, a 3,200W and a 4,000W, and the lasers are very good for holding extremely close tolerances, but not all of the parts that we produce need to have that type of tolerance," says Peters. "The beauty of the Twister is that we can





run <sup>1</sup>/<sub>4</sub>-in.-thick material and some of the other heavier materials up to 100 percent faster than what the lasers can cut. We can run so much faster, and we can produce the part quite a bit less expensively. A lot of our customers, if we can give them an option, sometimes don't need that laser tolerance—the plasma tolerances are good enough. The customers like picking and choosing how much money that they want to spend."

The quick cutting speeds when using the Twister can shave off some of the cost to produce a part, but savings also come in the form of lower operating expense. Gas consumption, as well as the electricity to power the Twister, are both substantially less than what is required for Hickey Metal's lasers. Peters says that the overall savings when working with the plasma compared to the laser is 20 percent to 30 percent.

"The gas consumption on the plasma is far less than what it is on a laser," he says. "We use oxygen for cutting carbon, but we use Komatsu's QuickSilver, which basically lets you cut stainless steel and aluminum using less consumables. The consumption of propane and some of the other gases, like the nitrogen that you use, is very minimal."

Steven St. Hilaire, senior process engineer for Komatsu Cutting Technologies Division says, "The QuickSilver process involves the use of nitrogen as a carrier gas. Propane, a liquefied petroleum gas, LPG, is then mixed in, resulting in the breakdown of LPG into free hydrogen, which produces a reducing atmosphere. It uses a similar principle of a bright-annealed process, resulting in hydrogen cleansing when cutting. The cut edge is actually cleaner than the surface of the material itself."

Peters says that there weren't many Twisters in the United States when the company had its machine installed last April, but St. Hilaire says that since then the Twister has become a popular choice for both American and foreign fabricators. "They are popping up at a rate of one per month in the United States and four to five per month in Japan, China and Korea," he says. "We have 250 installs of previous models in United States."

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