

Taurus Fabrication charges into tube fabrication

California fab shop strives to offer customers new tube laser cutting machine



By [Dan Davis](#) | August 11, 2020 | [Article](#) | [Tube and Pipe Fabrication](#) | [Join Discussion](#)



Taurus Fabrication’s Amada 3-kW ENSIS 3015 RI fiber laser has the ability to cut tube and channel, which has opened the door for the fabricator to offer its customers new options when it comes to part design. *Images provided by Taurus Fabrication*

During most of his life, Beau Huiskens has been driven to take the extra step, and it’s turned out to be a pretty good life strategy. It’s also turned into a useful [business plan](#).

Like many fabricators, Huiskens spent his early years working with his hands. The family grew up “two hours from any stoplights” in Sonoma County, Calif., he said, so that meant that he wasn’t making plans to hang out at the mall or meet friends at the local burger joint. He spent his time riding motorcycles and helping his dad build houses.

As he grew older, his attention shifted from working on dirt bikes to trucks. One truck project turned into multiple projects. Tweaking the engine evolved into full motor swaps.

“That’s kind of where it all started,” Huiskens added. “I didn’t want a standard vehicle.”

After earning a degree in mechanical engineering from Sacramento State in 2003, he took his love of custom modifications for trucks and launched a business with his brother fabricating off-road upgrade packages for Jeeps. The business got some traction in those early days, and the focus expanded to include other truck types. The company's products, such as its drivetrains and suspension systems, had a reputation for being durable enough to survive the hazards that come with aggressive rock crawling.

During this time the business engaged with a whole new client base, working with companies in the construction and the tech industry. The latter really got Huiskens' juices flowing as his design skills were challenged and he started to learn more about the CNC manufacturing that was required to make these complex fabrications.

Working with these new customers, Huiskens became a customer himself of other metal fabricating companies. While his shop had some manual machining equipment and a basic plasma cutting table, he lacked more sophisticated equipment, such as a laser cutting machine and a CNC press brake. But what he found when he outsourced work was that sometimes the contracted shops didn't meet specified tolerances or couldn't meet the accelerated lead times that the jobs required. That's when he sensed a real opportunity to take the next step in the metal fabricating business.

Knowing that the business he founded right out of college wasn't set up to take on more sophisticated fabricating jobs and higher-volume work, he decided to strike out on his own. He sold his interest in the company at the end of 2014 and founded [Taurus Fabrication](#) in January 2015. With a Torchmate HD CNC plasma cutting table, a Haas VF-2 milling center, and a Haas TL-1 lathe, Huiskens now was going after the larger-scale fabricating customer.

He found success early on with customers in the automotive and agricultural industries, and like other fab shops, Taurus Fabrication was being asked to consider taking on more work, which ultimately required more investment in capital equipment.

"They were demanding more of a one-stop shop, where they would give me a weldment and that would include a lot of machined and welded parts," Huiskens said. "They weren't going to give me the jobs if I said, 'Well, if you get all the machined components and other items, I can then do your job.'"



Taurus Fabrication has various mills and lathes to meet the machining needs of its customers. In fact, the shop often used its Haas VM-6 mill to put holes in tubes. One of the main cost justifications for purchasing the laser tube cutting machine was to free up the company's mills for machining activities.

"We realized that we needed to get on the phone, get a machine really quick, and get to work."

That explains the company's continual investment in new fabricating and machining technology. It has since added a Haas VM-6 mill, a Haas UMC-750SS 5-axis vertical mill, a Haas VF4SS, a Haas ST-30SSY lathe, a Haas DS-30SSY lathe, an Amada 2.5-kW Pulsar A2000 laser cutting machine, and an Amada 6-axis, 88-ton HD8025NT press brake.

Taurus Fabrication now employs 18 people, but in those early days, Huiskens didn't necessarily have the operating experience to accompany each new piece of metalworking technology.

"I had to work with the vendors and go from there. I'll learn the next step and the one after that," he said. "When you are forced to figure something out, you figure it out."

Around 2017 Huiskens figured he needed some new cutting capability. His 2.5-kW CO2 laser cutting machine could handle mild steel ½ in. and thinner, and his high-definition plasma cutting table was good for cutting 5/8- to 1.5-in. mild steel. But he could see a need for tighter tolerances and better edge finishes on thick material than his current plasma cutting table could provide. He wanted to investigate fiber laser technology.

But this wasn't going to be an upgrade of a flat-bed laser cutting machine. That's why he purchased an Amada 3-kW ENSIS 3015 RI fiber laser at FABTECH in Chicago in 2017.

What Was the Motivation?

"I didn't just want a laser that was like what I had. It needed to be different," Huiskens said.

In lieu of an actual tube cutting machine, Taurus Fabrication personnel were sticking tubes into the cutting chamber of the milling centers to cut holes. It was an awkward dance to get the tubes set up and then have them stick out of the machine's window as the holmaking was taking place.

The new fiber laser cutting machine has a rotary index that allows the shop to tackle tube cutting in a much more direct way. The machine can handle material up to 20 ft. long and repositions the tube automatically during cutting to produce parts up to 19 ft. long. The rotary chuck has independent jaws that make it possible to hold different shapes of tubing, angle iron, and channel. No collets or fixtures are needed to process these various materials. The largest shapes the equipment can handle are 8.66-in.-dia. round tube, 6-in. square tube, 8.66-in. diagonal in rectangular tube, 3.5- by 3.5-in. angle, and 6-in.-wide channel.

Now the fab shop can turn around prototype and low-value tube work in a matter of hours, instead of waiting for the right opportunity on the mill and then trying to create the perfect setup. The machine operator only needs to load the tube into the machine and then unload the parts and remaining tube stock when the job is complete.



The Amada ENSIS 3015 RI fiber laser has a rotary index that accommodates tube cutting. The machine can handle material up to 20 ft. long and repositions the tube automatically during cutting to produce parts up to 19 ft. long.

“We now have the ability to provide another option. That’s what I wanted to provide to my customers. I wanted to be able to do more,” Huiskens said.

What Sort of Cost Justification Was Done?

The main cost justification was that Taurus Fabrication could free up its VM-6 mill to take on more machining work. The mill had a large operating window (a 64-in. X axis, 32-in. Y axis, and 30-in. Z axis), which made it the machine of first choice to tackle tube work before the [latest Amada laser cutting machine](#) was purchased. But the mill also was a workhorse for the shop, and any tube work caused other milling jobs to get pushed back. The new laser tube cutting capability made it easier for the shop to maximize the milling work that was already in-house and pursue new opportunities.

Huiskens said that alone didn’t represent the entire cost justification, although it was an important influence on the purchase decision. The additional benefit of having such a machine was that it would put the company in the same league with larger shops that also had tube cutting capabilities.

“When these large shops get low-volume, high-mix jobs and they can’t schedule it on their machines, I can do that now,” he said. “It definitely helps me be competitive in a new market.”

As an example, he pointed out a recent case where a service center, which had a much larger and more expensive laser tube cutting machine, came to Taurus Fabrication looking for help because the service center couldn’t process the multiple variations of tubing required for the job. The laser shop was able to take on the job, complete the cuts, and deliver the tube by deadline, completing a task that the service center couldn’t.

What Needed to Be Learned About Tube Fabricating?

When it comes to the latest in fabricating technology, you can’t just take an average person off the street and teach him to run the equipment. A lot of factors, such as engineering and programming, come into play.

Huiskens gave an example: “You have to make sure that your solid model is accurate with proper corner radiuses, so when the cutting head is tracking around the outside of the tube, it doesn’t interfere and crash, ruining the material or worse the laser head.”

The new laser cutting machine has a probe that can be used to ensure that the machine has a complete picture of the tube shape, but it takes time for the probe to come down, touch both sides of the tube, and process the information. If not used correctly, it can sometimes cause the machine to crash. Huiskens said that it’s much more efficient to have good cutting programs that take the necessary steps to avoid potential crashes, so green light cutting time can then be maximized.

Software helps to create these trouble-free programs. Huiskens said his programmer has experience working with 3D models and has become adept at using the machinery’s software. It’s a little more “involved” than creating a program for a 2D laser job, according to Huiskens, but that doesn’t stand in the way of the programmer being able to turn jobs around quickly.

The tube cutting process also is somewhat unique in that it doesn’t have the same cutting capabilities of a 5-axis dedicated tube laser. In this case, the cutting head is always perpendicular to the tube. The cutting head can’t tip to cut something like a 45-degree angle.



The ability to rapidly make holes in various tube sizes is one of the benefits of Taurus Fabrication having in-house laser tube cutting capabilities.

“So when you get to the end of a tube where you might normally make a miter cut and have a sharp point, you can’t do that,” Huiskens said. “You can compensate to where you’re cutting on the line and you leave extra material on the inside of the cut, or you can choose to not leave the extra material.”

Sometimes not having the sharp points is good for the welders, he said, because they don’t have to grind as much to prepare for the weld. The fit-up with the less sharp edges works out just fine for the task.

What Has Been Learned About Tube Handling?

Huiskens said tube handling hasn’t been too much of a pain. His material supplier can provide them with tubes only for the jobs on the schedule, so they don’t have to stock a large amount of material. (Taurus Fabrication keeps some standard-sized tubes on hand that are used frequently.)

Additionally, the tube can be loaded on a cart and wheeled right to the nearby machine for loading onto the rotary chuck.

What Has Been the Biggest Challenge?

“We have to educate our customers about the capabilities of the machine so that they can understand the value in it and how it fits into their design criteria,” Huiskens said. “That’s a challenge that we have today.”

Taurus Fabrication has been in this position before as it added new capabilities to capture more business from its existing customer base and new customers looking for a one-stop shop. It’s just that this time the company added a machine tool that was more expensive than anything it had ever purchased before. But when a fabricator is convinced to take that extra step to serve its customers, the fabricator has to look at that investment as a necessity, not necessarily as a gamble.

“I really do like being able to think outside the box with design, and we can do this more with the tube laser. It really gives us a lot of options,” Huiskens said. “That makes it well worth it for us.”

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