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Lasers on the Cutting Edge

Automation Makes EDMs Faster, More Efficient

Two Tracks for Abrasive Waterjets

New Generation 3D Lasers Grow Metro-Detroit Job Shop

Sometimes succession of a family business from one generation to the next doesn't always go as planned. Take, for example, Laser Specialists Inc. (Fraser, MI). Incorporated in 1986, the company was positioned at the forefront of laser cutting technology. Its founder, Thomas J. Paquin, was a pioneer in the laser cutting industry and is credited with introducing one of the first five-axis laser systems to the Metro-Detroit area in 1989. Paquin's unexpected death in 1993 significantly reduced the momentum of the young company.

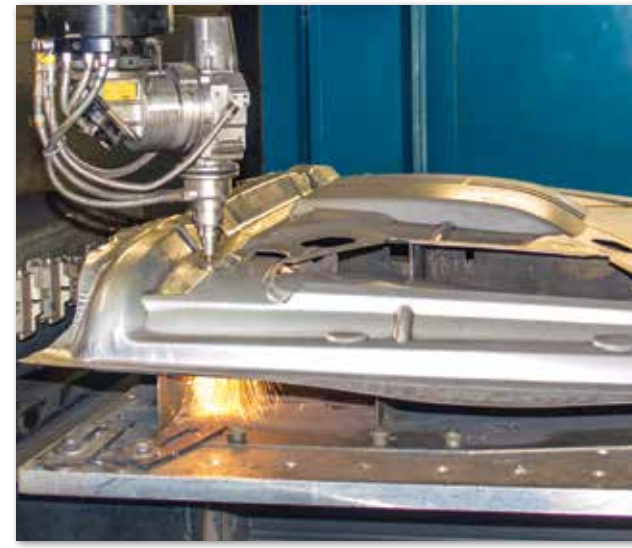
Paquin's sons were still children at that time and the courts appointed interim management to run the company, which proved unsuccessful. It wasn't to be successful until 2004 when two of Paquin's sons, Jon and Nick, took control of the laser cutting job shop. While periods of the last 13 years have been challenging, perseverance, hard work, and savvy equipment procurement have led to success.

Laser Specialists has grown into a 24,000 ft^2 (2229-m^2) manufacturing center, equipped with a variety of laser cutting systems. The company also has a 14,000 ft^2 (1300-m^2) warehouse. Its 20 employees work two 10-hr shifts, 5–7 days per week. Equipped with both three-axis (2D), and five-axis (3D) laser cutting services, the company has established itself as a premier laser cutting service center by providing modern, cost-effective cutting technology and services.

According to Jon Paquin, owner and vice president of business development, a majority of the company's customer base is composed of Tier 1, 2, and 3 suppliers to the automotive industry. "We also service customers in such industries as aerospace, military, agriculture, energy, electronics, and fitness equipment," said Paquin. "We are fairly well-diversified. Automotive is still a primary focus for us being in Metro-Detroit. Our customers range from small, 10-man shops to larger Tier 1 companies."

When Jon and Nick Paquin first took control of the business in 2004, they were working with limited resources and equipment.

"We had two old five-axis lasers and two two-axis flat lasers," Jon said. "We started hitting the streets and realized that we had to differentiate ourselves. We had to get up to speed on technology. I began to attend trade shows; I came across Prima Power at a FABTECH show and learned the equipment. I identified Prima Power as being one of the major players in the application of the fiber laser integrated into the CNC, when it was relatively new," he said.



The Prima Power Laser Next has a working range of 3050 × 1530 × 612 mm and is equipped with a 3-kW or 4-kW high brilliance fiber laser for lower cycle times and reduced cost per part.

Laser Specialists bought its first Prima Power laser in 2009—a 3-kW Rapido fiber laser. The machine has a fiber laser source with different powers, according to the type of production. The high-brilliance fiber laser with high energy efficiency, eco-compatible use, and no maintenance provides the greatest benefits in large series production.

"We were ramping up some programs and had two shifts going on an older CO_2 laser doing some higher volume programs," said Jon Paquin. "Taking out some of

the labor was need to increase our efficiency. There were some parts that we were cutting that took up to 5 1/2 minutes on the old machine that we were now able to run at 1 1/2 minutes on the Rapido. We mastered the technology and customers became familiar with us as a company that could turn parts around quickly, within tolerances, and with high quality."

In 2011, Laser Specialists purchased a more powerful 5-kW CO_2 Rapido in order to process thick, heavy-wall tubing. "By 2015, we were continuing to grow and cut a lot of hydroformed tubing," Jon Paquin continued. "We really needed to increase our cutting speed. I studied the hot stamp industry and [found that] the Prima Power Laser Next was geared to meet the needs of the niche hot forming market. As a job shop, we took a different approach. We decided to adopt that same equipment to handle not only our production opportunities but our prototype work as well."

Automotive part manufacturers need highly-specialized products for cutting sheetmetal parts. In designing the new 3D laser machine, Prima Power leaned on its experience and dialogue with customers and supply chain partners.

One of the main design goals for Prima Power Laser Next was to maximize throughput with a dramatic reduction in cycle times. With Laser Next, productivity on a typical benchmark component (B-pillar) increased 25%. In other words, four Laser Next systems produce as much as five of the previous model.

Laser Next has a working range of 3050 × 1530 × 612 mm and is equipped with 3 kW or 4 kW high-brilliance fiber laser. Its compact focusing head is fully sealed for best protection and features direct-drive motors, double protection SIPS (Side Impact Protection System), fully-metallic sensor, and focal position control. "The focal positioning control allows us to run two jobs simultaneously," said Nick Paquin, president. "It allows us to cut different thicknesses simultaneously without a manual adjustment."

In shops, space is money. Laser Next's compactness allows for installation of more machines since there can be up to three units, one next to the other, connected to the same magnetic scrap conveyor with no need of excavation works. It is possible to install more machines in the same area (e.g. four Laser Next instead of three units of the previous model), dramatically improving the productivity per square meter ratio.

For Laser Next, Prima Power capitalized on its experience of hundreds of installations in the 24/7 manufacturing of high-strength steel components, widely used in car production, with a focus on maximizing machine uptime. Required maintenance was reduced and simplified to cut down on nonproductive time. The high-precision and dynamic turntable, with servomotor and absolute encoder, is designed to ensure reliability, safety, and ergonomics. With the blocking times, the distance between table and light curtains is very short, allowing faster and more comfortable loading/unloading operations in full safety.

Hard work and savvy equipment buying have paid many dividends for John Paquin (right), owner and vice president of Laser Specialists, and his brother Nick, president.

Laser Specialists purchased its second Laser Next in 2016 and its third in 2017.

"A lot of times these short-run production opportunities open up when a die breaks, or a trim die breaks in production or maybe production dies aren't ready in time when a vehicle is going to production," said Jon Paquin. "I have that situation right now with one of our customers. They need a three-month run on four part numbers of 15,000 parts each—all condensed into a two-month time frame. That is 60,000 parts over two months and without the Prima Power equipment that is something that we would never be able to do," he concluded.

For more information from Prima Power North America Inc., go to www.primapower.com; or phone 847-952-6500. www.alicona.com; or phone 630-372-9900.