

Performance Products, Inc. Tackles the Unusual to Deliver for Customers

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Delivering Performance for Customers

Performance Products owners Phil and Betty Horton exude energy. That energy sets the tone that has led to this machine shop's tremendous success.

Like many successful machine shop owners, Phil's beginning with Oroville, California-based Performance Products was humble. In 1986 he started working out of his garage machining radio control boat parts. The business quickly gained a reputation in the hobby industry, expanding to bicycles and beyond.

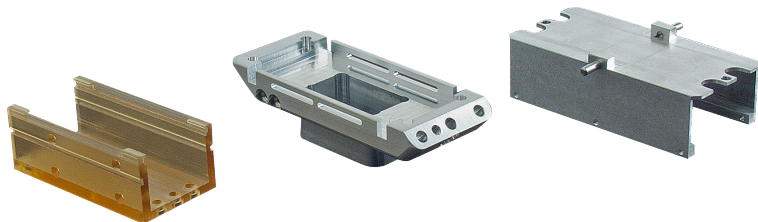
Today, as a result of word-of-mouth marketing from his loyal following of engineers, Performance Products has diversified into medical and cosmetic lasers, power generation, food, helicopters and even parts for "Humvees."

Performance Products is known for its ability to make unusual parts like laser electrical connectors and surgical laser components including laser cartridges, hand piece tips and brackets with pins.

Tackling the Unusual

Operator talent, careful equipment choices and the right capabilities make up the company's success equation and have earned a reputation for consistently good parts. Most often, they are intricate parts machined from difficult materials. The lion's share of the jobs that move through the shop involve machining aluminum. For the food industry brass and stainless are the most common materials. Even ceramics have their place in this operation.

One very challenging application involves solid blocks of highly conductive and brittle Ultim 1000 that must be machined on three sides in three operations while avoiding deformation to make a laser cartridge. In another application, holding a $\pm .002$ " tolerance on a $.037$ " thin-walled laser bracket is the challenge.



Surgical laser components

"The team at Milltronics consistently supports us as we face complex jobs," Phil says. "We needed to be able to serial number copper heat sinks for a customer and Milltronics stepped right up. They assisted us with a custom macro so we can generate specific alphanumeric numbering schemes."

Reliable and Accurate Machines Make the Cut

Phil believes in the power of multiple machines and maximum uptime to keep the business growing. Uptime means choosing the most reliable equipment for the shop floor.



Along with reliability and accuracy, owner Phil Horton cites design, quality as reasons he has become a "Milltronics shop".

"The accuracy and reliability of our machines are the reasons we can deliver for customers time after time," Phil says. "I look for machines that fit this description so it's rare for us to have unplanned downtime."

Along with reliability and accuracy, he cites design, quality as the reasons he has become a "Milltronics shop" when it comes to vertical machining centers and turning centers, "Milltronics being an American company also means a lot to me," he notes.

The People and the Machining Centers - Versatile and Productive

"Finding qualified operators in this area is tough," Phil explains. "I focus on recruiting the best. This way I can run our shop's 11 machines with me and two operators." Phil's main focus, however is managing the sales and customer relationships and the lion's share of the engineering and machine programming, which is why premier operators are key.

As primary programmer, Phil employs GeoPath CAD/CAM software system for programming his mills and lathes. "Because our two operators are on the floor and I am not operating machines as often, it doesn't make sense for me to program at the machine, but Milltronics' conversational programming capability has advantages on the shop floor."

His two operators spend their days making the shop floor sing with output.

The TT24 twin table machining center (23" x 25" x 20" XYZ; 40 taper; 10,000 RPM) purchased in 2007 may well be the flagship machining center in the shop. "We don't make money when our spindles are idle. This machine just runs and runs. We can take advantage of the machine's two tables to set up multiple parts. We all but eliminate spindle downtime with this machine," Phil says.



Having numerous machining centers that are reliable and easy to operate allows Performance Products to handle multiple operations easily. This surgical laser tip which holds a sapphire is a two-piece aluminum assembly machined on four sides in three operations. The Milltronics vertical machining centers do the job without distortion and hold tolerances to .002". Another laser part requires seven operations.



The other attribute he likes is that unlike pallet machines that require coupling, the TT24 does not.

"Right now we run eight different parts on it and this machine has doubled our output per day." One task for which the shop uses this bridge-style machining center is to make upwards of 1,200 parts per month for a hydroelectric plant.

The fast drilling rates are a given, but it is designed so that the operator does not have to lean into the machine. There are no doors to open or close and there is no time lost changing parts because one table is available for loading or unloading workpieces while the other is safely enclosed in the work zone.

This machine has proved so unfailing that maintenance beyond preventive is rare. "When we do need to turn to Milltronics we just make a telephone call, always get to speak to someone and usually can troubleshoot the problem on the spot" Phil says. "They always have our backs."

Even though Performance Products' operators came to the company with no experience on Milltronics machines, they have easily adapted. His feeling is that Milltronics machines almost teach themselves to operators who have experience with other machines.

Day to day, the four VM16 vertical machining centers handle a mix of jobs from machining castings to production machining the many complex medical laser parts. Programs can be shared among all Milltronics machines so a job need not wait for a certain machine to

be open.

Phil explains, "We use a VM16 to make an anodized aluminum radio control servo arm that we rough machine, stop the machine, install a broach then finish machining. The mid-program start feature we have on the Milltronics machines makes this easy. My operators can verify the program graphically up to the desired start point and then simply switch over to the run mode. We save a lot of time because there is no weeding through machine code."

This shop is one of the few in the country that machines ceramics for parts like laser lamp heads. Phil states that the key to success with ceramics is to know how to care for the machines. The abrasive nature of ceramics "tears up the machine" and so the VM16 making these parts must be completely pumped out and cleaned thoroughly before switching to aluminum.

For big parts, Phil invested in an SL6 slant bed turning center. A standing order for one customer's large, proprietary parts are milled on the VM24 machining center and then finish-turned on the SL6. The SL6 also is critical to successful turning of a plastic fitting for a medical laser.

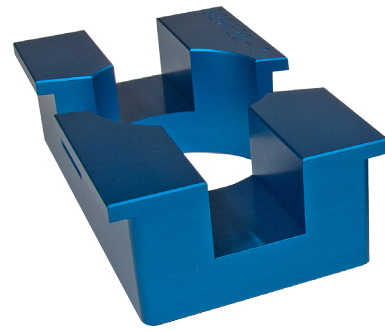
Fixturing also presents a great challenge to Phil and his team, particularly in the case of aluminum castings. "We have to be creative about how we hold a part and make sure we are not bowing it," Phil says. Tooling is designed and made in-house to hold the castings and parts Performance Products makes for its customers.



Parts for a hydroelectric plant are first turned on the SL6 slant bed turning center and then finished on the TT24 twin table machining center.



This surgical laser heat sink presents a challenge. The Performance Products team has no problems holding tolerance and machining this extruded aluminum workpiece with fins on two sides without distortion using a VM16 vertical machining center. This is a result of the machine's heavyweight construction.



In addition to the basic machining business, owner Phil Horton designs and manufactures helicopter tools and parts to solve maintenance problems like this holding fixture and tail rotor swashplate bearing greasing tool.

Adapting to Customers' Changing Needs

Over the years, customer needs have changed. The bar for quality has risen and the need for equipment that can hold tolerances to .002" is clear. The lead times are shorter. Laser parts lead time has dropped from six months to three in many cases. Because most of Performance Products' jobs require multiple operations – up to as many as seven on one laser part – productivity is important.

Phil points to the robust construction of his machining centers as the reason he can hold tight tolerances on thin-walled aluminum parts, avoiding distortion when machining extruded fins. Where customers may have historically inventoried parts, they have moved to just-in-time to manage cash flow. So, another advantage of having more machines is the ability to meet tight deadlines. Performance Products often configures sub-cells to run multiple

operations and get jobs done quickly. There is an upside to this shift in the market, according to Phil. He says that as long as his company can make the deliveries he is confident that the business will remain with him.

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Performance Products produces hundreds of thousands of parts each year with only two full time operators using 11 machines. The versatility and footprint of Milltronics VM16s makes it easy to configure sub cells for maximum productivity.