

Horizontal Machining Center Slashes Process Times and Boosts Profits for Virginia Panel

Virginia Panel Corp. (Waynesboro, VA) began doing business just as electronics and computing started taking off in the United States. Established in 1959 as the second-ever licensee of IBM, the company was responsible for making electrical control panels. Now with 143 employees, Virginia Panel makes a sophisticated line of electrical components, including Mass Power Interconnects that allow customers to connect equipment such as computers or complex aerospace modules to test equipment. These products are specified by name by many major commercial and military equipment suppliers for their testing programs.

As the electronics and computing industries took off, so did Virginia Panel. Due to the company's growth, Ronnie Martin, director of mechanical products, began looking for contract machining help. But outside help would increase costs, and Virginia Panel supplies premium products with thin margins. What was he to do?

Martin began investigating production and machine-tool technology for solutions, and quickly focused in on the cost and performance aspects of horizontal machining centers. “I’ve been running vertical machining centers for 30 years,” he explains. “At every tool show I would look at horizontal machining centers, but the sticker price made it out of the question.”

What the company needed was a new way of thinking, and it started by assembling a team of the company’s manufacturing and engineering personnel. “It’s a team effort for this company to look at different and better ways of doing things,” says Rick Ebinger, manufacturing manager. “Our components command a premium price in the marketplace, so the only way we’re going to protect our margins is to lower costs in production. Where we can better control our quality through our process, programming, and equipment, we save money in the long run.”

After significant due diligence researching different horizontal machining centers, Martin selected Mazak’s (Florence, KY) PFH-5800 that offers a two-pallet changer with the capability of expanding into a full palletized system.

It didn’t take long for Virginia Panel to begin realizing numerous productivity benefits. Setups take 75% less time compared to the company’s vertical machining center, and cycle times are down an average of 50% per part.

“Roughly 25% of our parts have migrated to the new horizontal machining center from our verticals,” Martin says. “That will grow.”

For one cast aluminum 4” x 1.5” x 18” part produced from a sand casting that the company moved to the new horizontal machining center, machining time went from 1 hour and 15 minutes to 35 minutes. Plus the horizontal could accommodate end-hole operations that the vertical could not, saving even more process time by eliminating the drilling operation and its setup time on a separate machine.

Also when roughing steel with the new horizontal, Martin found that they could increase feeds from 3” per minute on the vertical to 23” per minute on the PFH. Setup times were also decreased tremendously, for some parts they went from 1.5 to two hours on the vertical to just 15 minutes on the horizontal machining center.

Owing to its two-pallet system and fast tool-change time, the PFH-5800 can double spindle usage. With its two-pallet changer, loading and unloading takes place without interrupting machining. Cutting time is never idled, and the only labor needed is for loading and offloading parts. It can also be designed for an unattended lights-out system that has the flexibility to grow as manufacturing expands.

Horizontals also give users more flexibility over a vertical because more work can be processed at one time with tombstone fixtures. With the new horizontal machining center, the company is able to machine three sides of the part. Then they can just turn the parts over on another fixture and finish them in two operations. Even when the part is being turned over, the machine is still running, because the part setup is done on the outside of the machine at a load station.

In fact, Virginia Panel redesigned aluminum base plates to function as mini-pallets for parts run on the PFH-5800. Together with the standard 2-pallet changer, setups are quick and easy.

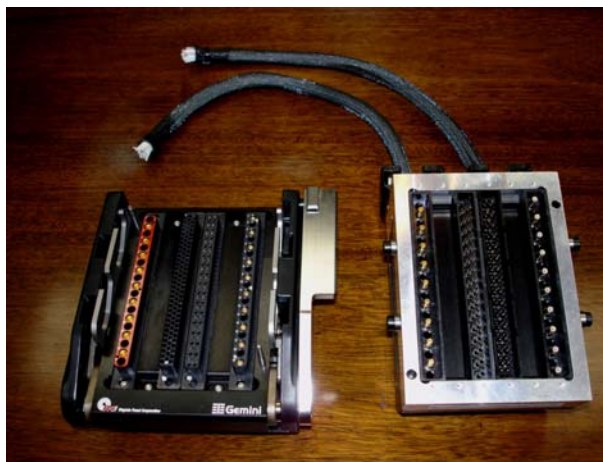
The highly advanced PFH-5800 horizontal machining center features a 15,000-rpm maximum spindle speed with 1.9-sec. acceleration powered by a heavy-duty 30-Hp spindle motor (optional 40) and 1.0 G acceleration in X, Y, and Z axes. It has feed rates of up to 2362 IPM for X, Y, Z axes. Pallet size is 19.6" x 19.6" with a 1.5 sec. table index per 90° of rotation. Chip-to-chip time is 2.2 sec. Axis travels are: X, Y, and Z, of 28.7" x 28.7" x 29.1" respectively. Positioning accuracy is +/- 0.00012" and repeatability is +/- 0.00004". It has a standard 40 tool storage capacity with 80, 120, 180, 220, and 330 as options. With the larger tool storage options, a company can have redundant tooling for jobs done untended or when a palletized system is used.

How does Martin describe solving his cost/benefit problem? "With the HMC, in the long run, our parts from door-to-door are actually less expensive to produce,

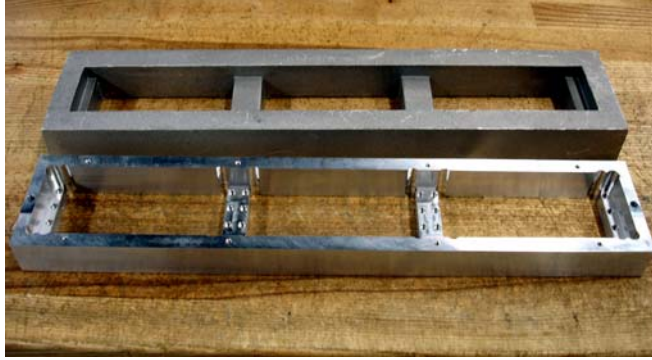
which is good, because our customers continue to demand better price, quality and delivery. I also think that if business continues to increase, the future of our company is to someday go unattended with the Palletech system. We'll turn the lights out and go home while the machine makes us parts and money."



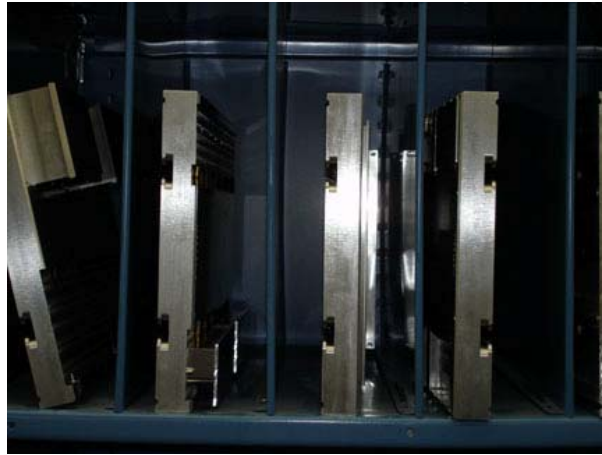
Ronnie Martin, director of mechanical products, and Virginia Panel Corp.'s PFH-5800 from Mazak.



Two components of a VPC Mass Power Interconnect product.



Moving this cast aluminum part from a vertical machining center to the PFH-5800 horizontal cut processing time from 1 hour and 15 minutes to 35 minutes, plus the horizontal could accommodate end-hole operations the vertical could not.



Virginia Panel designed its own base plates that act as mini-pallets for its new PFH-5800.