

General Industrial

The Challenge

Tapemation Machining, a job shop located in Scotts Valley, California, prides itself on its competitiveness. "We're continually investing in the latest model, fastest and most accurate machines, so we operate at peak efficiency," said Bruce Erickson, president. The company needed a machining center to handle high-end, difficult, short-run parts for their customers in the aerospace, defense, medical, marine and petroleum industries.

With the wide variety of parts, the machining center had to be easy to load and capable of handling multiple setups. Another requirement was flexibility, Tapemation wanted the capabilities of a boring mill and the ability to run unattended. Finally, the accuracy of the machine had to be at the highest level.

"We were really surprised at the accuracy of the HMC1600. We have other HMCs in the shop and we couldn't get any of them anywhere near as close to the tolerances we can hold with the Giddings & Lewis Horizontal."

Bruce Erickson, President,
Tapemation Machining Inc.



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X-ray Machine Parts

The Solution

Tapemation chose the Giddings & Lewis HMC 1600 horizontal machining center with an optional live spindle and remote operator set-up station. The live spindle provides them with boring mill capabilities. The extended reach into parts for boring and drilling operations is especially useful on tooling and prototype work.

For the company's production parts, the four-pallet pool and the remote operator station make it possible to set-up multiple jobs and run lights-out several nights a week.

The problem of balancing rush jobs and prototypes that require interruption of production work is a common problem for job shops and manufacturers alike. The expense is magnified when dealing with large parts. The four-pallet matrix allows fixtures for different jobs to be setup at the same time. "By loading and setting up the table offline, we save about 20% over using a boring mill, which is what we compete against," said Mr. Erickson. In the X-ray part example, Tapemation reduced four operations to two and was able to eliminate extended tooling while still reaching into all areas of this large part with the live spindle. In addition, the 96-inch swing clearance of the rotary table allows use of large or combined fixtures, which may be used for several parts of different shapes and sizes, reducing the cycle time on short run jobs. Tapemation has a rigorous quality control program. Its internal system meets MIL-I-45208A and utilizes laser calibration every six months to ensure the accuracy of its machining processes. The type of high-end parts Tapemation machines for their customers demand tight tolerances. "We have the HMC 1600 dialed into perpendicularity over the 72 inch cube by about 0.0005 inches, which is pretty phenomenal for a machine that size," said Mr. Erickson. "And linear displacement is dead on."

Part Specifications

Airport X-ray Component, 54-inch diameter, 30 inches tall. Welded steel fabrication. Part rotates at 60 rpm and has to be balanced. Operations: Two (2) operations. Processes include drilling, milling, back-spot facing and rigid tapping.

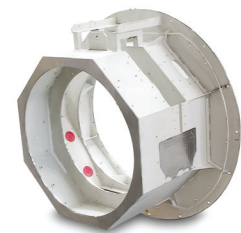
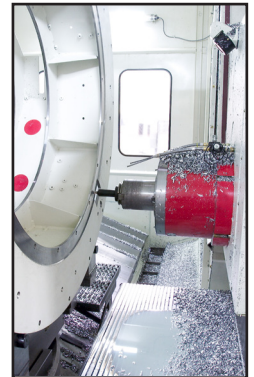
HMC 1600 Horizontal Machining Center

The Results

- Multiple setup capabilities reduced number of operations from four to two.
- Live spindle eliminated extended tooling and reduced number of setups and fixtures.
- NC rotary table allows machining all the way around the part.

General Capability Improvements

- 20 percent reduction in cycle time with offline loading and setup.
- Added reach and reduced tooling costs with live spindle.
- Substantial swing of rotary table allows use of large or combined fixturing reducing cycle times and costs on short run jobs.
- Through-the-spindle coolant reduces down time for chip removal and enables lights-out manufacturing.
- Better quality parts due to machine accuracy.
- High-performance control adds efficiency.



HMC 1600 specifications

- Equipped with a four-pallet pool with power rotation, 360,000-position rotary table, 4000 rpm 130 mm live spindle with a 45 kW drive and 120-position tool changer.
- Options include: remote operator set-up station, programmable 250/1000 psi coolant through-the-spindle, part probe and remote operator station.
- SIEMENS SINUMERIK 840 D control