

## Rotary-transfer machines give firm an advantage

**L**iberty Research, Gonic, N.H., a supplier to the telecommunications industry, produces about 100 million parts annually. The materials the company machines are made of steel, aluminum, and brass. To capture more of the market, the company began investing in new technology, starting with European lathes and automatic barfeeders and eventually moving to rotary-transfer machines.



The HB 32/45-16 is a 16-station rotary machine that produces delicate, close-tolerance parts at high cycle times.

“The European lathes reflected a change of mindset for us,” says Liberty president Derrick Perkins. “We focused more on the electronics market and took steps to go after it. Granted, we were still turning parts, but the volumes were greater and the tolerances tighter — typically 0.0003 or 0.0004 in.”

To meet those ever-tightening tolerances, Liberty turned to Hydromat Inc., for rotary-transfer machines.

“With the Hydromat decision,” says Perkins, “the mindset changed again. We bought the Hydromats to go after parts that require one or more secondary operations. Anytime you have to handle a part during the process, you introduce variability, and this can impact consistency and repeatability.”

The 16-station Hydromats let Liberty produce parts that had needed multiple-operations with a single machine and one setup. For instance, a certain component

that was once made at Liberty on an older screwmachine was actually two pieces combined. These two pieces were machined and then brazed together. The process took a number of steps and set-ups. The same part is now made with one setup on a Hydromat HB 32/45.

“The part is a right angle T-shape,” Perkins explains. “We start with ½-in. barstock then proceed to do multiple operations — turning, milling, and grinding. There are a couple of flats on the part and a surface finish requirement of 32 rms. All in all, this is a very complicated job and probably couldn’t be done in a single setup any other way than on a 16-station machine.”

This method results in greater part consistency. The single-piece construction also performs better electrically. In addition, producing the part in this manner costs half as much.

This new level of efficiency and cost effectiveness became vital as Internet growth and expanding dot-com markets put greater demands on Liberty. “While the volumes in this business may be enormous,” Perkins says, “per-part prices are low, and margins are thin. If you don’t have an edge, you won’t make it.”

“The challenge,” Perkins adds, “becomes performing multiple precision-machining operations on small parts at the shortest possible cycle times.” All the while, the part has to meet quality standards. Should a part fail, a telecom customer may lose thousands of dollars a minute.

To help maintain both quality and efficiency, Liberty’s work is statistically driven. The company has a central SPC system that downloads everything into its network — including the manufacturing plan for every part number it makes, the materials, tolerances, tooling, process sequences, and the quality plan.

This level of technology is also reflected in the 16-station Hydromat HB 32/45s Liberty uses. “These are finesse machines,” Perkins says. “They execute precise operations at high cycle times. Yet they’re also rugged. Running around the clock is what they’re designed to do, and this is one area where investing and apply-

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ing technology becomes a strategic and competitive advantage.”

Currently, one operator runs two Hydromats at Liberty, and there are more than 20 tools per machine. However, the operator spends most of his time checking parts with digital gages and feeding data to the SPC system.

The information is used for hourly capability studies at the plant as well as fed to a computerized quality-management system. Every time the data changes, due to tool wear, the installation of a new tool, or any other reason, an automatic capability study on the machine is performed. The result of those studies is data that verifies both part quality and processes efficiency.

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