Deep control

By Alan Richter, Editor

This month, CUTTING TOOL ENGINEERING *covers the 'world's fastest' CNC and indexable-insert gundrills for deep-hole drilling.*

Warp speed ahead

When high-performance machining, a fast CNC that manipulates the machine tool to function at optimal efficiency is critical. Miceli Technologies Inc. says it has pushed the machining efficiency envelope with the introduction of the MTI CNC. With a minimum processing capability of 50,000 blocks per second, MTI bills its CNC as the world's fastest.

"If you were to look at the higher-end digital products on the market, you would find they probably have a processing speed of about 2,000 blocks per second," said MTI President Carlo Miceli. Based on a handful of MTI CNC units in the field, he noted that users report their retrofitted machines run at least twice as efficiently as they did when purchased, which cuts cycle time in half and greatly improves the motion control's smoothness.

Miceli Technologies

Billed as the world's fastest, the MTI CNC has a minimum processing speed of 50,000 blocks per second.

A faster block processing speed enables the controller to execute the part program quicker and maintain a higher average feed rate. This level of performance is especially helpful when machining parts with complex geometries.

"The more complex the geometry, the larger the gain," Miceli said about the company's product. "This statement sounds confusing to most people, because, typically, as the geometry becomes more complex, performance deteriorates."

He added that, by maintaining a higher average feed, cutting tools experience a more consistent chip load per tooth, so they are not shifting back and forth between heavy and light cuts. This substantially extends tool life.

Although the MTI CNC maintains a higher average feed, it doesn't exceed what the builder engineered the machine to achieve, which would accelerate equipment wear and tear. "We take that engineered limit and handle it extremely efficiently," Miceli emphasized.

With the MTI CNC, the operator is able to view two interfaces: the controller environment and Windows XP Pro for managing files, e-mailing, scheduling and other tasks.

The company's first version, which can interpolate up to eight continuous axes, is a stand-alone CNC.

For more information, contact Miceli Technologies Inc., Essex, Ontario, at (519) 818-1963.

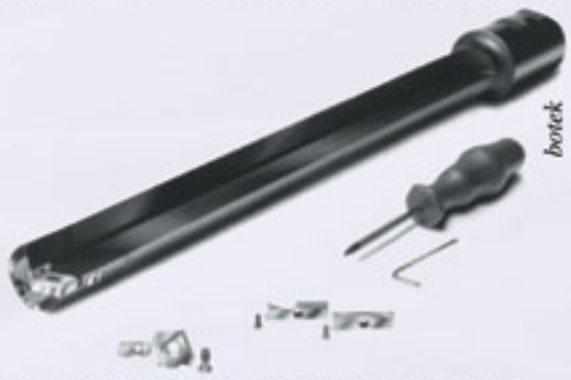
Time for a change

Nearly all types of cutting tools are available in indexable-insert versions. Until recently, gundrills were an exception. botek USA Inc. changed that with the introduction of its Type 01 single-flute and Type 02 2-flute indexable-insert gundrills, now offered in an expanded range from 0.531" to 3.937" in diameter.

Gundrilling is a well-established method for producing deep, precise holes with a self-guided drill. Generally, the hole depths are 6 diameters deep or greater.

BTA drilling is another method for machining deep holes using high-volume coolant flow with chip evacuation back through the drill tube. With more area to clear chips than a gundrill, a BTA drill offers a higher penetration rate into the workpiece and, therefore, is able to drill up to 10 times faster than a conventional single-flute gundrill. However, a BTA machine costs up to 35 percent more than a gundrilling machine because it provides much more horsepower and higher coolant flow rates.

Unlike conventional gundrills, the cutting edges of indexable-insert gundrills have chipbreakers for chip control and the inserts, as well as the indexable guide pads, can be coated and made with a choice of carbide grades to suit the specific application. Although more costly than a conventional gundrill, "these tools have up to 10 times faster feed rates," according to Jim Rose, botek USA's president.



botek

The design of botek's indexable-insert gundrill is based on the toolmaker's BTA drill.

In addition, the inserts, which typically have two cutting edges, don't require resharpening. This eliminates sending the tools to a regrinding service or doing it in-house, which requires not only grinding equipment but skilled workers.

"A lot of people want indexables because there's a lack of skilled trades in our industry to grind a tool

(continued on page 97)