

productive times

Gaining a competitive 'edge'

There are few companies for whom "too good" is actually not good enough. AccuRounds happens to be one of them.

This doesn't apply to the products the company fabricates for its customers, though. Located in

these components.

"Even though we use sharp tools, they can actually be too sharp," said Mike McCormick, AccuRounds' engineering manager. "Sometimes, we would have a tool like a drill bit that had just

To solve the problem, AccuRounds turned to Conicity Technologies LLC, Cresco, Pa., a leader in cutting tool edge-preparation technology.

Conicity calls its process Engineered Micro-Geometry. EMG applies the proper geometric-shaped edge prep and precisely distributes that edge prep on the cutting edge as a function of the thickness of the uncut chip. Essentially, this means that rather than preparing the cutting edge in a conventional and uniform manner, the edge is prepped in a fashion that is unique to how the tool is going to interface with the workpiece material in the given application. This type of controlled edge geometry is key to optimizing the performance of any tool, resulting in maximum tool life, superior surface finish and flatness, and minimization, if not elimination, of burr formation.

AccuRounds has used Conicity's edge-prep services to great advantage.

"Our customers are quite serious about the finish on their parts," said McCormick. "In many cases, they insist on no scratches or chatter marks, and the finish has to be very smooth. Conicity's edge-prep service gives our tools an incredibly stable cutting edge while allowing us to provide our customers with the finish they are looking for."

The precision behind Conicity's



Conicity can apply its EMG process to tools as small as 0.0025" in diameter.

Avon, Mass., AccuRounds manufactures precision custom cylindrical components of all types and sizes for customers in a variety of industries. These components range from miniature heat-treated pins for the bearing industry to large drive shafts for paper-feeding machines.

No, the too-good dilemma applies to the cutting tools that AccuRounds uses to manufacture

been sharpened; it had a sharp edge, but a sharp edge does not always exhibit good metalcutting characteristics. When we would first mount the drill bit, we'd get quite a bit of chatter, resulting in tearing and finishing problems on the metal or even damaging the grain. Certainly, not every job involves parts that require a smooth, perfect finish, but for those parts that do, this became problematic."

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EMG process is particularly impressive given that AccuRounds sends out tools as small as 0.0025" in diameter.

AccuRounds' positive experience with Conicity is illustrated by an edge-prep test Conicity recently completed. AccuRounds was using a carbide reamer to form a special shape in 316 stainless steel.

"The results were outstanding," McCormick said, "but we were having trouble every time we set a new tool into place—lots of chatter, tearing and finishing problems, the works. Plus, we always ended up with a huge pile of scrap pieces before the tool finally wore in properly."

The test was performed without changing any other aspects of the process, i.e., same machine type, machining parameters, workpiece material and cutting oil. According to McCormick, with the Conicity edge prep used on tools from the same batch, AccuRounds was able to produce parts with acceptable finishes immediately upon tool change. Problem solved.

While providing customers with

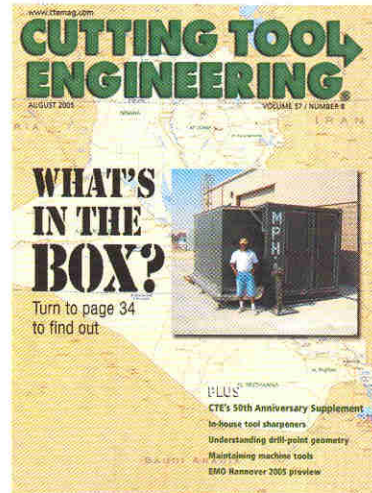
parts that exhibit a superior finish is the primary objective, the edge-prep services have helped AccuRounds realize some unexpected results.

"The bonus we discovered after the fact was that the prepped tool lasted close to 10,000 parts," said McCormick. "Prior to the edge prep, tool life was around 1,700 to 2,000 parts before the finish degraded beyond the point of acceptability. Apparently, the properly prepped cutting edge allows for more even tool wear."

AccuRounds has also seen substantial time savings as a direct result of Conicity's services. To begin with, there is no longer a "breaking in" period for a tool, during which the large volume of scrap pieces is generated. What's more, the increased tool life means that fewer tool changes are necessary. While each tool change may not involve a vast amount of time, the total time savings from eliminating multiple tool changes becomes significant. This also translates to faster turn-around times and, ultimately, faster product delivery times.

Given the benefits of EMG, it's a pity that a greater percentage of AccuRounds' cutting tools are not candidates for this process. McCormick estimates that only about 10 percent of all the company's tooling currently requires edge preparation. However, that percentage grows almost daily.

"Because our clients' manufacturing needs are so diverse, the opportunity to use off-the-shelf tooling is becoming increasingly infre-



quent," McCormick said. "And the more custom tooling we produce, the greater the need for Conicity's edge-prep services. In fact, I've got about 20 or 30 new tools right now that we're getting ready to send over."

As pleased as AccuRounds is with Conicity, its customers' feedback matters most. "We have had extremely positive feedback from our customers on the improved quality of the parts we're producing," said McCormick. "They're quite pleased. The bottom line is that we're giving them perfect pieces and we're getting them out faster."

It appears that Conicity has done more than put precise edge prep on AccuRounds' tooling. The company has also helped give AccuRounds an edge in the marketplace. Δ

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END USER AccuRounds

CHALLENGE

Overcoming problems when applying a tool with too sharp of a cutting edge.

SOLUTION

Incorporating an edge-preparation technology.