StackTeck In The Press

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The incredible shrinking lead time

StackTeck Systems has used the greater feedrates and accuracy in its new DMC 85 V high-speed machining center to replace some EDM and to shorten lead times on its finishing work.

StackTeck Systems has plenty of experience making tools for the packaging, caps and closures, medical, and electronics markets, but over the last few years it has increasingly been asked to manufacture something else: time. In the face of dwindling lead times, the innovative toolmaker reevaluated its process, looking for those seconds, minutes, and hours that had slipped away. This critical self-evaluation repeatedly pointed to the same bottleneck: a relatively high number of recuts on the tighter-tolerance areas of StackTeck's tools. Ewen MacDonald, team leader for high-speed milling and electrode making, says the diagnosis was simple.

"In our game, when you're making plastic[s] injection molds," MacDonald explains, "the lead time is actually the most important consideration for us, and our lead times have been cut down. A mold that five or six years ago required 26 weeks to manufacture, now, we're asked to do in 15 weeks or less. We had to find ways to manufacture quicker, because you can't ask the guys in design to think quicker—it just doesn't happen."

A Linear Progression

The challenge for StackTeck was twofold. Speed limitations on its existing high-speed milling centers sometimes meant more time spent on jobs and resulted in some recuts. StackTeck's VP of engineering Vince Travaglini explains that a shift in the type of jobs the company took on demanded a corresponding shift in capabilities.

"A lot of the work that we did at StackTeck earlier on was round," Travaglini says, "which is easier to machine with conventional machines, but we're getting away from that. With 3-D CAD you can design anything, and you've got to cut it."

StackTeck's CAM group team leader, Sandro Scarsellone, says the new CAD designs involved more high-cavitation, tight-tolerance jobs. "We do a lot of the same components with high cavitation, so we need to get accuracy and repeatability."

StackTeck found both in a brand-new, DMC 85 V high-speed linear machining center. The purchase definitely represented a hefty investment, but given its capabilities, StackTeck says it was worth the cost. With a spindle speed of 32,000 rpm, it can operate at maximum feedrates and rapid traverse speeds across the x-, y-, and z-axes of 394 ft/min.

Increased velocity was definitely a bonus, but for StackTeck accuracy may have been even more important. The DMC 85 V delivers that with ±.00031-inch positioning accuracy and a path measuring system with a resolution of ±.000004 inch. MacDonald says the pinpoint movements made possible by this precision can be attributed to one thing.

"I think the major aspect about this particular machine is definitely the linear drive. It allows the machine to accelerate and decelerate better than when we were using ballscrew technology, and we maintain accuracy around tight corners where before we would tend to overshoot. The linear motor can keep the accuracy at higher speeds."

Faster Than a Sinking EDM

So fast and accurate is StackTeck's newest high-speed machining center that it's actually replacing intricate work formerly completed via EDM. "We used to use EDM for tight-fit areas—very crucial fitting areas with some of our components," Scarsellone says. "It used to take us a lot longer, but the EDM was more accurate."

Scarsellone explains they've now reversed that trend and are able to machine such areas in a quarter of the time it took when they had to make and use an electrode, "and we're getting a better finish," he adds.

"We used to have to make a rather large electrode to burn a fairly complicated mold surface," MacDonald says. "Now we can machine steel directly, so we're cutting once instead of twice."

And by only cutting once, StackTeck created more time throughout its new and improved process. "[The DMC] has definitely had a profound effect on precision," MacDonald explains, "because it means we tool out the mold surfaces, send it to the [coordinate measuring system] to verify all the sizes, and the job is done. Previously, we'd send it to CMM, the tolerances wouldn't be in spec, and we'd have to look at a recut."—*Tony Deligio*

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