



Milling

Accupro® ST Series Helps Machining Businesses Power Up Performance by Ditching Guesswork

James Langford | Sep 03, 2024

Imagine you could microwave a bag of popcorn without having to guess which time and temperature settings would deliver the ideal snack rather than a charred mess or a bag half-filled with unpopped kernels.

It's impossible, right? Every brand of popcorn is different, as is every microwave, which is much the same challenge machinists have traditionally faced setting up tool assemblies to cut and shape metal workpieces.

Getting it right often requires hours of trial-and-error testing based on wide ranges of surface footage and feed rate recommendations, which hinders productivity and drives up cost. At least, it did before the arrival of MSC's *Accupro® ST Series*.

The 3-piece milling assembly, which is sold pre-set, pre-balanced and ready to use, leverages the science of machining dynamics to highlight which specific operating parameters will maximize productivity and throughput across a range of common metals and machining centers.

Ultimately, those capabilities give machining and manufacturing businesses an edge in tackling three critical business priorities: competitiveness, revenue growth through capacity gains and overcoming the widening gap in manufacturing skills, says Jamie Goettler, senior director of metalworking sales and innovation for MSC.

Coping with a Shortage of Skilled Machinists

The skills gap, in particular, is taxing the ability of metalworking businesses and *manufacturers* to meet customer demand as fewer new workers enter the field prepared to replace highly skilled ones who are retiring.



[Click here to view Accupro® ST Series options](#)

A *Deloitte Insights* report in 2021 found more than 500,000 open manufacturing positions at any time during the previous six months and estimated the figure would widen to 2.1 million jobs by 2030.

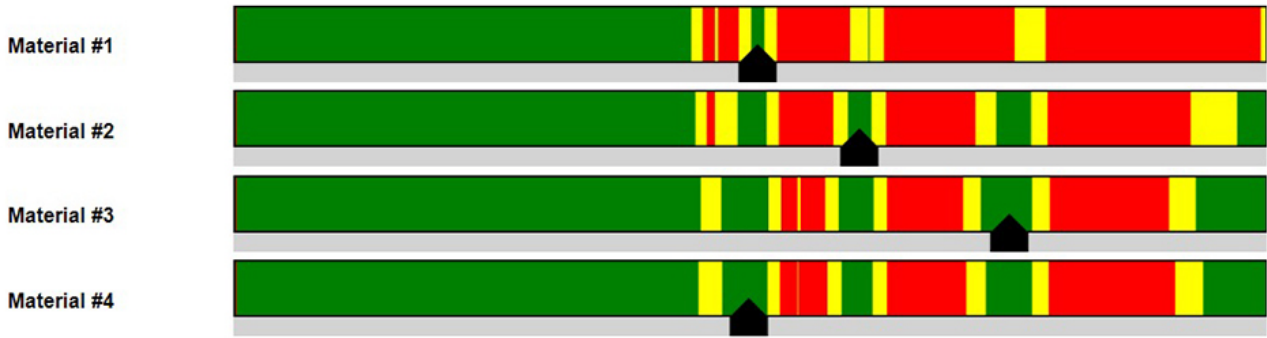
Read More: *Optimized Milling Without the Guesswork*

The Accupro® ST Series makes coping with the labor shortage easier since users “no longer need to assign their most skilled machinists to time-consuming trial-and-error testing,” Goettler says. “The time needed to dial in new tools is eliminated with this product.”

Accupro® ST Series customers can choose between 36 end mills, three dual-contact, coolant-through pre-balanced CAT-40 toolholders in ½-inch, ⅝-inch and ¾-inch diameters and three retention knobs.

The proprietary design of the toolholder allows MSC to ensure the repeatability of various combinations of holder, tool and machine.

“The preset tool-holder assemblies are designed, tuned, and optimized to maximize productivity on some of the most common machining centers in the U.S.” through online dashboards that show the optimal feeds and speeds when using Accupro® ST Series, says Michael Gomez, senior innovation research and development engineer with MSC.



	#1	#2	#3	#4
Machine Name:	Haas 12,000 RPM	Haas 12,000 RPM	Haas 12,000 RPM	Haas 12,000 RPM
Machine Model:	VF, VM, UMC	VF, VM, UMC	VF, VM, UMC	VF, VM, UMC
Holder Name:	1/2 Stub Holder CAT40	1/2 Stub Holder CAT40	1/2 Stub Holder CAT40	1/2 Stub Holder CAT40
Holder Model:	18856615	18856615	18856615	18856615
Tool Name:	1/2 5FL Regular	1/2 5FL Regular	1/2 5FL Regular	1/2 5FL Regular
Tool Model:	90783952	90783952	90783952	90783952
Gage Length:	3.125 in	3.125 in	3.125 in	3.125 in
Material Name:	H	M	P	Ti
Material Group:	Hardened Steels	Stainless Steels	Steels	Titanium and Titanium Alloys
Cutting Parameters				
	#1	#2	#3	#4
Spindle Speed: <input type="text" value="rpm"/>	3044	3637	4511	2993
Depth of Cut (Ap): <input type="text" value="in"/>	1.0000	1.0000	1.0000	1.0000
Width of Cut (Ae): <input type="text" value="in"/>	0.1250	0.1250	0.1250	0.1250
Feed: <input type="text" value="IPM"/>	91	109	135	90
Power (%):	42.93	34.86	33.97	24.25
MRR: <input type="text" value="in^3/min"/>	11.39	13.60	16.87	11.19
Chatter Status:	Stable	Stable	Stable	Stable

English Units Metric Units



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Accupro® ST Series sample dashboard

The dashboards utilize bar charts that display stable zones of spindle speed in green, unstable zones prone to error-inducing chatter in red and regions of uncertainty in yellow.

In many cases, machinists using traditional trial-and-error based on catalog or handbook values to find stability on a new setup might simply increase feed or speed until chatter begins, then slow down.

“That’s human nature,” Gomez says. “What they wouldn’t know is that if they had sped up a little more, they might have found another stable pocket for their assembly or material.”

Not only are the locations of stable zones nonintuitive, he says, they vary based on tools, assemblies and the type of material being machined.

“Until you can actually measure how that tool is behaving in your machine, you don’t know where these zones exist,” Gomez says. With the Accupro® ST Series, machinists can see a full range of zones before ever powering up their equipment by utilizing the online dashboard—access to which is included with the purchase.

Then, they “can start making parts right away,” Goettler explains.

“The more they do that in the course of a year, the more jobs they are able to process because they’re not spending time at the machine doing trial-and-error work,” he says. “They’re actually making parts.”

Such capability is particularly valuable for smaller machining and metalworking businesses competing

with larger rivals that often have an advantage in budgets, staff and equipment.

“We know from history that it can take hours to identify stable operating speeds for many milling applications,” Goettler says. Devoting machinists, often the most skilled ones, to that process hinders productivity even more in a market that’s short of skilled labor to start with.

To eliminate that step, the Accupro® ST Series relies on the principles of the modal tap test used in MSC’s award-winning MillMax® service, which identifies optimal combinations of custom tooling-assembly setups.

Watch: *How MSC MillMax Eliminates the Need for Trial-and-Error Setup*

MillMax® has helped customers increase material removal rates an average 300 percent while slashing cycle time by an average 50 percent, rendering it particularly valuable to production facilities that may use a particular combination thousands of times a year.

What differentiates the Accupro® ST Series is that it provides that kind of optimization data from an off-the-shelf tooling assembly, making the technology more accessible to job shops where metals and tool-holder-machine combinations may change week to week, day to day and even hour to hour

‘The Luxury of Choices’

The Accupro ST Series assembly — and the accompanying dashboard — help eliminate costly trial and error associated with new job setups, Goettler says. Because the dashboard reveals ideal, stable operating speeds and feeds, the shop can begin making revenue sooner.

Knowing those stable speeds and feeds can also assist with providing precise quotes on prices and lead times to current and prospective customers. With the range of toolholders, *end mills* and retention knobs available, customers are able to reconfigure Accupro® ST Series milling assemblies as required. Those adjustments are enabled by Accupro®’s easy-to-use online product selection tool, which highlights the tools necessary for different materials.

In essence, Gomez says, the tool “serves as a dashboard configurator showing the secret-sauce recipe for their unique machine and assembly combinations.”

Once Accupro® ST Series users examine the range of stable operating zones, they can decide whether they want to prioritize speed, surface finish, repeatability or tool life based on the unique needs of their businesses.

If a supply-chain disruption has delayed delivery and a business wants to complete the order as soon as possible, it might choose the highest speed even though doing so reduces tool life, Goettler says.

“The really great thing is that the user has the luxury of choices,” he adds. “They have options to consider instead of relying on the first stable performance region they find.”

How could the Accupro® ST Series help your business become more competitive? Tell us in the comments below.