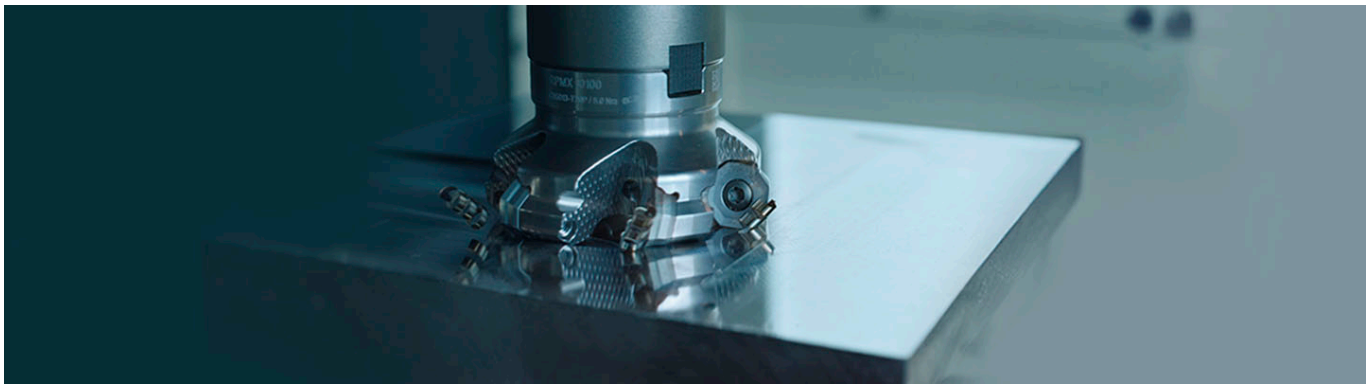


Metalworking

New Product Guide: Versatile Tools and Solutions

Kip Hanson | Jul 22, 2025

In a perfect world, machine shops and sheet metal fabricators wouldn't have to buy so many different products.

The milling department could machine everything with a single, ultra-versatile milling cutter, the turning department would rely on an equally magical turning tool, and the welding people would need just one do-everything abrasive for weld prep and surface conditioning afterward.

Needless to say, we don't work in that world. The metalworking industry must use the right products for the job at hand or suffer lost productivity and decreased part quality. Machine shops, in particular, often grapple with the question of ***whether to buy a high-performing***, often material-specific grade of carbide for a part number they might never see again, or settle for lower productivity to reduce cutting tool carrying costs and eliminate tool crib bloat.

Ironically, a poor decision here can turn what would otherwise be a profitable job into a loser, practically guaranteeing that the next order will go elsewhere. So for facilities that are involved in high-mix, low-volume production or those doing a lot of prototyping or repair and maintenance work, choosing the most versatile tools possible is a way to satisfy both needs—minimizing the number of products needed for efficient machining, while also respecting the company's inventory and financial concerns.

Video: How To Maximize Tooling Versatility

The One-Two Abrasives Punch

A similar example comes from the welding department. "Welders only spend an average of nine minutes each hour actually joining parts," says Andy Gerver, who's responsible for channel marketing with 3M Corp.'s Abrasive Systems Division. "The rest of the time is largely spent beveling parts with an abrasive wheel before welding, and smoothing the surfaces afterward to prepare them for paint or to generate a smooth, aesthetic finish. Simply put, there's a lot of handwork in that 51 minutes, so if you give workers the most efficient abrasives available for each of these tasks, they'll not only get more welding done, but won't be as tired at the end of each day."

The products Gerver is talking about are 3M's Cubitron 3 and Scotch-Brite Precision Surface

Conditioning lines, both launched in early 2024. Each is made with precision-shaped abrasive grains that are said to deliver greater metal removal capabilities than their predecessors—the Cubitron 2 and the "regular" Scotch-Brite that shops have been using for decades—while also being freer cutting.

Gerver shares the story of a recent customer visit to a shop in Tennessee. "The welder was spending 30 minutes every hour grinding with a competitive wheel. When we showed him the Cubitron 3 Fibre Disc, he was skeptical. 'This thing looks flimsy—there's no way it's going to outperform the hard-bonded wheel I've been using for years.' But we asked him to give it a try. A few minutes into the demo, he stopped grinding, looked at us, and we braced ourselves for bad news. But he just said, 'I'm done.' Not with the test—done with the entire job. What used to take him 30 minutes now takes less than two. He was sold."

There's more to this than higher throughput. As any shop owner or HR manager knows, good employees are hard to find, especially in the welding department. According to Gerver, nearly one-third of the country's 408,000 welders will retire within the next two years. Because of this, employers must maximize the labor they have, and what better way to do so than to provide them with products that are both effective and easy to use?

3M's Cubitron 3 uses a reengineered grain design and proprietary resin binding to boost tool life. (Image courtesy of 3M Corp.)

"These products are like a one-two punch in any prep-to-paint application," Gerver says. "Cubitron 3 handles the aggressive stock removal, and Scotch-Brite Precision or Precision Heavy Duty Surface Conditioning finishes the surface, fast and consistently, so it's ready for coating."

When you can reduce your grinding time, you clearly get a boost in productivity, but safety is similarly improved, Gerver says. "As any welder can attest, grinding generates a lot of vibration, so by cutting it

to a third or less of what you once did each day, it reduces the impact on your body and any long-term effects that can bring. Everything just gets easier."

For Milling Versatility, Eight Is Enough

Back in the machine shop, workers are looking for similar versatility. They want cutting tools that deliver exceptional, across-the-board performance in a wide variety of workpiece materials and applications, and eliminate the need to change cutters every time a new job comes across the machine. Jay McCord has the solution.

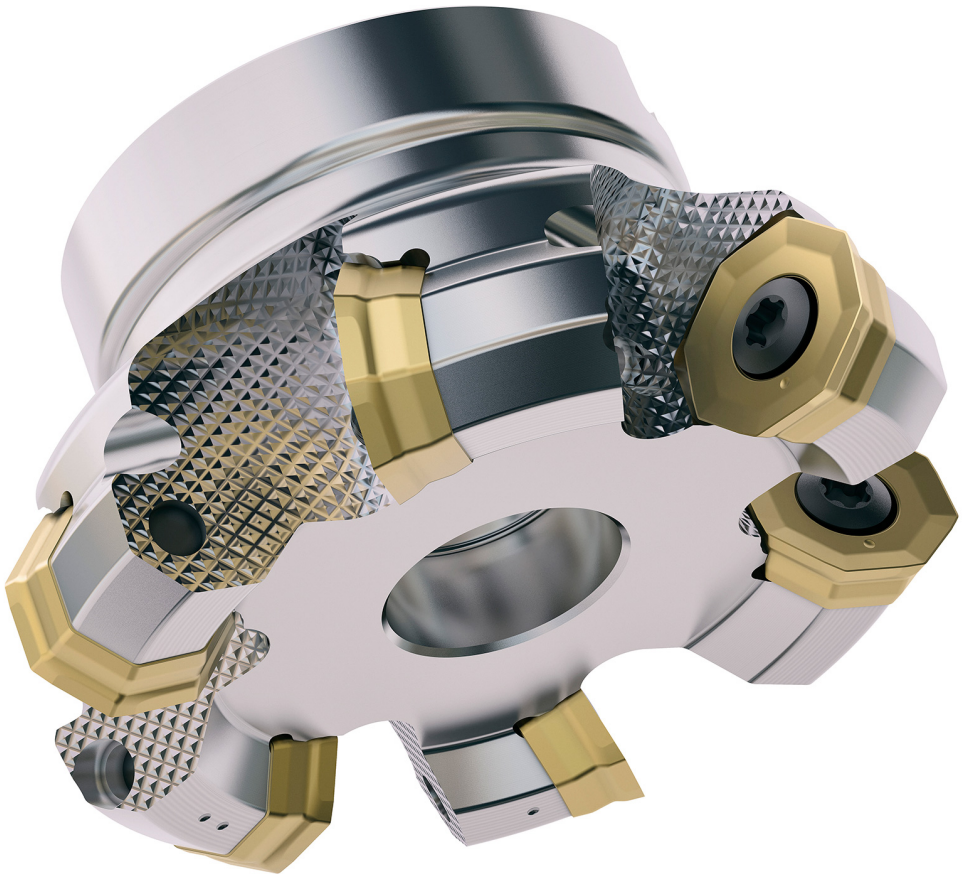
The Americas Indexable Product Specialist at Seco Tools, McCord suggests that one place to start is with another recently upgraded technology—the eight-sided Octomill insert. "Octagonal inserts are nothing new," he says. "Our versions were first introduced more than 30 years ago, and they've long been a staple in the industry. But even with proven tools like these, there's room for improvement—and opportunity to add value for our customers."

McCord explains how Seco builds on this decades-old technology with the Octomill 06 face milling cutter. One of the key upgrades is in the interface between the insert and the pocket. Seco redesigned this connection to automatically center the insert inside the pocket, ensuring a much more secure and consistent connection. It also decouples the cutting edge from the indexing seat, so if an edge breaks or chips overrun the top of the insert, there's no longer a need to throw it away because a single corner got damaged, or worse, throw away the holder due to a damaged pocket.

This decoupling also opens the door to new insert geometries—of which there are plenty, according to McCord—that can all mount on the same cutter body platform. Octomill 06 milling cutters start with the familiar octagonal insert—eight cutting edges on a single-sided insert—but also include additional insert styles built on the same pocket interface, among them a round 16 and a moderate high-feed insert.

"Think of the moderate high feed as the midpoint between a traditional high-feed tool and a standard face mill. A typical high-feed insert runs with a shallow lead angle, about 11 degrees," McCord says. "A face mill insert, on the other hand, uses a 45-degree lead angle. The moderate high-feed insert splits the difference at 20 degrees."

Video: Tooling Up: Everything You Need to Know About High Feed Machining



Seco's Octomill 06's multi-insert pocket design handles a wide range of applications. (Image courtesy of Seco)

This lead angle provides the benefits of high-feed milling, such as shallow depths of cut and aggressive feed rates, while easing the demands on machine horsepower and spindle load. For shops that want to take advantage of high-feed strategies but don't have the machine capacity to run them full-out, this is an ideal solution, McCord notes.

"It's a small change, but it has a big impact on tool life and consistency," McCord says. "With one cutter body, you can pretty much cover every milling operation, and do so with better performance, easier indexing and enhanced pocket durability."

Finding the Sweet Spot in Turning Grades

Kennametal is another tooling provider with an eye toward versatility. Scott Etling, vice president of global product management, says many shops are looking for the sweet spot in carbide grades, meaning tools that can handle most anything that comes along while providing both wear resistance and toughness. "For steel cutting, a P10 grade is targeted for finishing and wear resistance, while those in the P40 neighborhood are geared more toward roughing; P25 sits right in the sweet spot."

Here, Etling is talking specifically about Kennametal's new KCP25C, a CVD-coated grade designed specifically for machining steel alloys. Suitable for light roughing, finishing work, interrupted cuts and everything in between, it's designed to perform most operations "really well" while still delivering superior tool life and surface finish. "Starting with a P25 grade like KCP25C is usually the right move when you're machining steel," he adds. "It's a lot like our KC850 grade from years ago, only better. It's incredibly versatile."

For those cutting high-temperature alloys or performing tight-tolerance finishing, the KCU10B might be a better choice. A PVD-coated grade, it's also a member of the company's KENGold coating family but

has a sharper edge than the P25 just mentioned. And as Etling points out, the U signifies universal—you can use it on stainless steel in the morning and cast iron in the afternoon and still be home in time for dinner. Both grades can also be run wet or dry (although cutting fluids almost always deliver better results), yet a PVD-coated grade tends to be more stable across varied conditions.

Versatile solutions like Kennametal's KCP25C and KCU10B help to reduce tooling inventory while improving tool life, throughput and part quality. (Image courtesy of Kennametal)

The choice often comes down to the material: Are you ***machining Inconel*** or ***finishing steel***? Even more important, are you machining thousands of parts or just a few hundred? If the latter, it only makes sense to grab whatever's on the shelf, provided it delivers predictable performance, while saving the fine-tuning for the jobs you'll be running for weeks or even months.

Says Etling, "Lot sizes have changed. You don't see shops making thousands of parts at one time like in the past. That shift makes versatility more important than ever. So if you go in with a P10 or P40 on the CVD side, you could really miss the mark. That's why, in my opinion, P25 is the right place to start. It gives you a broader range—it may not be the absolute optimum for every application, but it covers most of what shops need."

Etling adds that a similar argument applies to the KCU10B. "Maybe you're not driving a Formula 1 race car, but neither are you putting around in a 1925 pickup truck," he says. "You're in the middle, where the work gets done. That's why these grades matter to our customers, especially now."

What tooling choices have you made in your shop to help strike the right balance between versatility and performance? Tell us in the comments below.