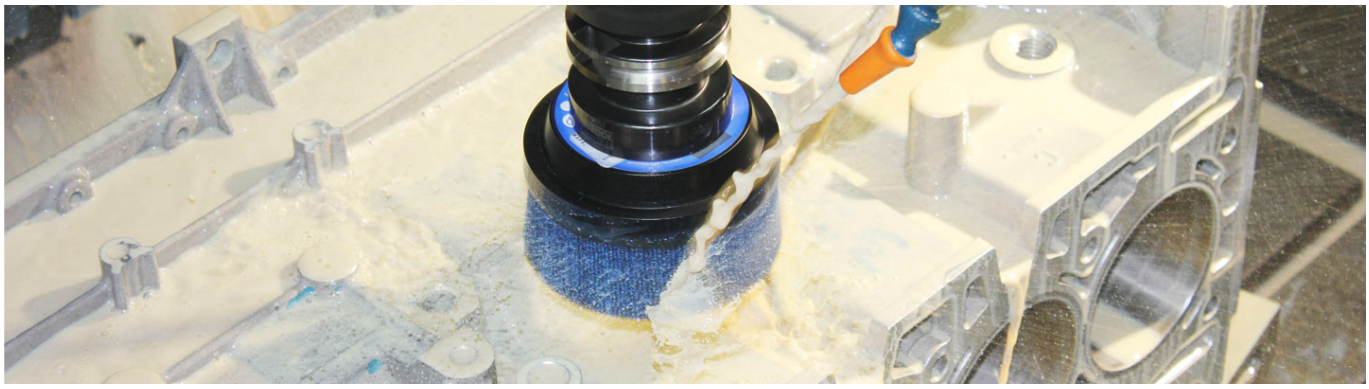

Machining

Mechanical Deburring: Osborn Adds Efficiency Through Innovation

Matt Morgan | Apr 26, 2022

An intricate part comes out of the CNC machine at the end of the cycle. It's a thing of beauty—just what the customer asked for—yet it's far from finished. One of your workers grabs a strip of sandpaper and prepares to spend the next five to six hours removing burrs and breaking edges before the part is ready to go out the door and your company can get paid.

It's good that the worker is productive, but you also have to wonder: How much more efficient and profitable could your business be if deburring—a critical step that removes sharp edges from machined parts—took minutes instead of hours?

That's a question Chris Lyons asks people when he visits manufacturers who are deburring manually and talks to them about switching to a mechanical process, whether it's in a robotic cell, a CNC machine or some sort of dedicated custom brushing machine.

> **"When we deburr mechanically, some of the pain points are going to go away. We can do it much faster than people do it manually. And probably more importantly, the results are consistent from part to part."**
> Chris Lyons
> Osborn

Lyons, a regional sales manager at ***Osborn***, recounts his recent exchange with the company that was taking up to six hours to deburr a part by hand. His solution had an immediate impact.

"We went in there with a disc brush and incorporated it right into the same machine where they were creating the part," he says. "We added it, and about five or six minutes later, it was done. They saved five or six hours, right there."

Your results may vary, of course. Savings won't always be as substantial as this example, but Lyons says it's worth the time to look critically at your facility's current deburring processes and investigate a

potential shift to mechanical methods.

Manufacturers should think of deburring as part of the process of machining and incorporate it right into the program. (Image courtesy of Osborn)

Though it may seem counterintuitive, this is especially true for companies operating on razor-thin margins, when the temptation is to pass up potential process improvements because "their backs are right against the wall" and they think they can't afford to add even a 30-second brush cycle in the machining center, Lyons says. The next time the job comes around, companies that recognize the value of mechanical deburring could invest in the process change and update the price of the part accordingly.

"If they can utilize these multimillion-dollar machining centers to the fullest and make sure that every dollar is squeezed out of it from a process perspective, then they are in a far more advantageous position to be as efficient as possible," says Brad Smith, director of sales for brushes at Osborn.

Manual vs. Mechanical Deburring

Manufacturers that continue to deburr and break edges manually may have several factors working against them, notably inefficiency and inconsistency.

“Manual deburring is usually very time-consuming, and it can be a lot more expensive. Also, the results will vary from person to person,” Lyons says. Instead, he says, manufacturers should think of deburring as part of the process of machining and incorporate it right into the program.

The filament on Osborn’s composite wheels features an encapsulated ceramic grain for longer life. (Image courtesy of Osborn)

“When we deburr mechanically, some of the pain points are going to go away,” he explains. “We can do it much faster than people do it manually. And probably more importantly, the results are consistent from part to part. There’s not a lot of variance from part one to part one-thousand, because we’ve dialed in a lot of the parameters that are needed to get the result that the customer is looking for.”

Besides recommending a move away from manual deburring when it makes sense, Osborn also works

with companies that already deburr mechanically but could benefit from a different approach. “We like to think we may be able to bring some improvement to the process,” Lyons says, “whether it’s a different filament style or adjusting the parameters at which they’re running the brush, and hopefully bring some value there.”

Custom Solutions for Deburring

Osborn’s Advanced Technology Brush (ATB) System features products designed for a wide array of materials—mostly metals such as steel, titanium and nickel-chromium but also woods and plastics.

“We’ve got radial brushes. We’ve got disc brushes. We’ve got internal brushes,” Lyons says. “Anywhere that there is a burr or a surface that needs to be cleaned up, we’ve got a brush that can effectively approach that.”

In addition to an extensive line of brushes, the provider of high-quality surface treatment and finishing products prides itself on the technical expertise of the team and the ability to provide customer solutions.

ATB Master wheel brushes from Osborn have a wide-face construction for high effectiveness on both metallic and nonmetallic materials. (Image courtesy of Osborn)

“We’ve got some long-life options. We’ve got some fast-cut options,” Smith says. “This is an engineered, solutions-based product. We have a standard offering of products in different geometries, but there are a lot of specials, whether that is a slight modification off of a standard or that is a ground-up special based on the specifics of operating restrictions, part geometry, whatever it may be.”

Osborn helps manufacturers understand not only what brush is best for their applications, but also how to maximize its benefit in their operations, considering factors such as materials, machine horsepower, part orientation, cutting tools and cycle time. Lyons says that with Osborn’s consultative expertise in tuning the process, a manufacturer is more likely to get a favorable result, and faster.

Osborn delivers off-the-shelf and custom-engineered wire brushes for the toughest finishing challenges. Check out the innovative solutions at MSC Direct.

“There are a lot of different elements to getting a brush to work correctly for your process,” he says. “That involves anything from the rpm of the brush, the penetration of the brush into the part, how

quickly that brush is moving across the surface of the part, and making sure you've got the right grit and the right filament size for the finish you're trying to achieve."

Watch this video for an overview of Osborn's ATB product offering:

Ceramic Filaments Provide Versatility

Whereas silicon carbide has been the workhorse media for deburring aluminum and steel for a decade, ***ceramic filaments*** have filled an increasingly important role on the facility floor these days.

"If a manufacturer is trying to get rid of some light burrs or maybe break an edge, silicon carbide is very useful," Lyons says. "As the harder superalloys, your exotic metals, have become more prevalent in the industry, silicon carbide sometimes is a challenge to get the results that customers are looking for. So we moved to a ceramic grain that's a much harder grain to present to the harder materials that we're seeing in the field."

Osborn's Uni-Lok disc brushes can process large burrs and generate significant edge radii on stainless steel and hardened alloys. (Image courtesy of Osborn)

And it's not just for harder materials anymore. Ceramic can be used on malleable metals, too, to improve cycle times.

"Years ago, I would probably have never even thought about using ceramic on aluminum because I knew that silicon carbide could do the job," Lyons says. "But if we can speed up cycle times and push that brush faster and get the same result, then everybody is happy."

Smith agrees. "Where silicon carbide in the past may have needed a few passes to provide a solution, ceramic can do it in a single pass," he says. "Ceramic grain can move things along quicker, be a little more efficient. The faster you can resolve an issue—whether that is remove a burr, break an edge, create some sort of finish—and move the part along, the more likelihood there is that a manufacturer is profitable."

