Precision Deburring Technical Deep Dive: How SHAVIV Helps Improve Quality, Reliability and Performance

Race Industry Now Webinar Highlights Critical Finishing Processes Often Overlooked in High-Performance Manufacturing

In motorsports and high-performance manufacturing, tremendous attention is given to machining accuracy, material selection, coatings, tolerances, and assembly procedures. Yet one critical step often receives far less attention than it deserves: deburring.

During a recent episode of EPARTRADE's Race Industry Now webinar series, **Nick Prohl, Marketing & Sales at SHAVIV**, joined host **Joe Castello of WFO Radio** for a technical deep dive into deburring technology and its direct impact on component quality, reliability, safety, and performance.

The webinar moved beyond theory and featured live demonstrations of SHAVIV's deburring solutions, showcasing how proper edge finishing can improve part quality while reducing production time and preventing costly assembly issues.

Why Deburring Matters

According to Prohl, virtually every machining operation creates burrs or sharp edges that must be removed before a component is ready for use.

"Anytime you're cutting metal, whether it's with a bandsaw, mill, lathe, waterjet, plasma cutter, or laser, you're going to create some form of burr," explained Prohl.

These burrs may seem insignificant, but they can create a wide range of problems, including:

- Improper fitment of mating components
- Assembly difficulties
- Damage to seals and O-rings
- Safety hazards for technicians
- Premature wear
- Reduced reliability
- Inconsistent quality during final inspection

For racing applications where precision and repeatability are critical, removing burrs correctly can help ensure parts function exactly as intended.

More Than Just a Deburring Blade

One of the major takeaways from the webinar was that deburring is not a one-tool-fits-all process.

Many machine shops rely on a single deburring blade for every application. SHAVIV demonstrated why different geometries and materials require specialized solutions.

The company offers multiple blade configurations designed for specific tasks:

B20 Bidirectional Blade

The B20 blade allows operators to work both with and against the cutting direction, making it particularly effective when burrs exist on both sides of a feature.

This design enables faster cleanup of difficult edges while reducing the number of passes required.

B30 Double-Edge Blade

For applications where front and back edges need simultaneous deburring, the B30 blade features a hook-style geometry that can remove both burrs in a single operation.

The result is improved productivity and more consistent edge quality.

B11 Blade for Small Features

As machining operations become increasingly precise, many components feature extremely narrow grooves and channels.

SHAVIV's B11 blade is specifically designed with a reduced head profile to access tight spaces that conventional deburring tools cannot reach.

Matching Blade Materials to Workpiece Materials

Another key discussion focused on selecting the correct blade material based on the material being machined.

SHAVIV offers multiple blade options designed to maximize performance and tool life:

High-Speed Steel (HSS)

The standard solution for the majority of machining applications, offering versatility across a wide range of materials.

M35 Cobalt

Designed as a premium all-around performer, M35 cobalt blades provide increased wear resistance when moving between softer materials such as aluminum and harder materials like stainless steel.

Titanium Nitride (TiN) Coated Blades

For shops working extensively with stainless steel and difficult materials, SHAVIV's TiN-coated blades offer significantly increased durability.

According to Prohl, these blades can provide approximately three to five times the service life of standard HSS blades.

Carbide Blades

For abrasive materials such as cast iron, carbide blades offer superior wear resistance and longer life.

Diamond-Coated Blades

For specialized applications involving glass and other extremely hard materials, SHAVIV offers diamond-coated solutions capable of maintaining performance where conventional blades quickly fail.

Countersinking and Hole Finishing

The webinar also covered one of the most common finishing operations in motorsports manufacturing: hole deburring and countersinking.

SHAVIV demonstrated several F-Series countersinking tools designed to remove burrs while maintaining dimensional accuracy.

Unlike aggressive powered methods that can easily remove excess material, hand-operated countersinking allows technicians to apply the lightest possible touch and maintain critical dimensions.

For higher production environments, SHAVIV's ratcheting countersink system allows operators to process multiple holes quickly while maintaining consistency.

The company also offers solutions for external diameters, tubing, brake lines, and pipe preparation, making the tools particularly useful for fabrication shops and race teams.

Specialized Solutions for Sheet Metal Fabrication

Fabricators working with aluminum panels, chassis components, brackets, and sheet metal assemblies face unique deburring challenges.

SHAVIV demonstrated several dedicated sheet metal tools capable of simultaneously cleaning multiple edges while improving operator safety.

These solutions help fabricators produce cleaner parts while reducing finishing time, an important advantage in racing environments where turnaround speed is often critical.

Deburring for Plastics and 3D Printed Components

As additive manufacturing becomes increasingly common in motorsports, SHAVIV has also developed specialized ceramic deburring solutions.

Unlike traditional cutting blades, these ceramic tools use a non-cutting edge that pushes flash away rather than cutting into the workpiece.

This approach is particularly effective for:

- 3D printed parts
- Plastics
- Composite materials
- Soft engineered materials

The result is a clean edge without the risk of damaging delicate components.

The Importance of Controlling Material Removal

One of the most important technical points emphasized during the webinar was controlling how much material is removed during deburring.

While it may be tempting to repeatedly work an edge until it appears perfect, excessive deburring can alter dimensions and compromise component fit.

Prohl recommended achieving the cleanest possible finish in a single pass whenever practical.

For precision components, especially those involving fittings, threads, countersinks, and sealing surfaces, excessive material removal can create new problems while attempting to solve existing ones.

Small Process, Big Impact

The webinar reinforced a simple but important lesson: deburring is not merely a cosmetic operation.

Proper edge finishing contributes directly to:

- Component reliability
- Assembly efficiency
- Worker safety
- Dimensional consistency

- Product quality
- Long-term durability

In racing and performance applications, where even small details can influence outcomes, these benefits become increasingly important.

As machining technologies continue to evolve, SHAVIV's approach demonstrates that the final finishing step remains just as critical as the machining operation itself.

For manufacturers, race teams, engine builders, chassis fabricators, and machine shops seeking higher quality and greater consistency, deburring is more than an afterthought. It is an essential part of the manufacturing process.

For more information, **watch the full webinar here.**