



Metalworking

Lenox's Next-Gen QXP Blade Tackles Jobs That Test Carbide's Mettle

James Langford | Sep 26, 2023

Ad campaigns for bandsaw blades tend to focus on their toughness.

Designing them, however, is a more delicate process—one that requires balancing tooth strength with abrasion resistance to build the most durable and effective blade possible for uniquely grueling work.

Customers wrap the whip-thin elliptical blades around the two wheels of a bandsaw machine, where they're twisted up to 90 degrees, run at speeds of 300 feet per minute or more and tensioned at 20,000 to 40,000 pounds per square inch.

Upgrading top-selling products capable of withstanding those conditions, as LENOX has done with its bimetal **ALLOYWOLF™ QXP** blades, raises the stakes even further, requiring manufacturers to increase both tooth strength and abrasion resistance even though they tend to work against each other.

Bandsaw Blade Materials Engineering

"It really comes down to the metallurgical characteristics of the high-speed steel" used, says Matt Whinery, product development engineer with LENOX. "Certain grades are better at abrasive wear resistance but not as good with durability. There's a similar challenge with carbide blades, where higher hardness usually means less fracture toughness, and vice versa."

Founded in 1915, Massachusetts-based Lenox built its first bimetal blades in the 1970s. Today, blades such as the **ALLOYWOLF™ QXP** combine a spring-tempered alloy steel backer with tooth tips of high-speed steel.

High-speed steels are tool steels with alloying elements that allow for faster cutting of materials than previously provided by high-carbon steels.

ALLOYWOLF™ QXP offers exceptional hardness combined with abrasive wear resistance and hot hardness, or the ability to maintain strength at high temperatures.

"We've learned that there's always a tradeoff between abrasive wear resistance and toughness of the tooth material when it comes to edge chippage," Whinery explains.

Extending Bandsaw Blade Life

With the next-generation QXP, a new high-speed steel-edge configuration combined with the company's new proprietary heat-treatment process "has enabled us to optimize the shape and size of the carbides within the high-speed steel," he says. "On a small scale, what's going on inside the tooth allows us to prevent chippage and arrest cracks before they spread and create a bigger problem. You end up with steadier, controlled micro-wear rather than large unpredictable chunks being ripped off the tooth."

Finding techniques like that to extend tool life is a priority for manufacturers and machinists as they grapple with stubborn inflation, disruptions in supply chains and a workforce shortage expected to reach 2.1 million by 2030, conditions that not only drive up costs but can also hinder timely deliveries to customers.

The success of Lenox's bandsaw enhancements is reflected in customer satisfaction during trials. More than 80 percent of users liked the next-generation QXP better than the bandsaw they were using previously, says Cameron Guthrie, national account manager with Lenox.

"On a bandsaw blade, you're dealing with high tension and cyclic twist applied to a blade, so fatigue failures have traditionally been a problem out in the field," Whinery says. "What we've done is to come up with a best-in-class bimetal product that resists that."

The resistance comes in part from LENOX's revitalized manufacturing process in areas such as heat treatment and residual stress application to prevent blade fatigue.

Upgraded coatings are engineered to form a barrier that keeps heat away from the tooth and pushes it into the chips of the material being removed.

The new blade, being introduced on a rolling basis as customers replace existing supplies, is a key component of Lenox's bandsaw lineup, Whinery says, suitable for industries from automotive to construction and oil and gas.

Along with offering superior tool life, it's ideal for customers with older sawing machines that might not be powerful enough to obtain the maximum potential from a higher-priced carbide blade.

Under those conditions, "a saw-related issue could cause a blade failure," Guthrie explains. "Because a bimetal blade is going to be at a lower price point, you can push rates harder and still get significant blade life without the risk of damaging a more expensive carbide-tipped blade."

Getting Started with ALLOYWOLF™ QXP

Customers using carbide blades "have the most success on newer machinery featuring higher-horsepower motors and integrated vibration-dampening systems but many businesses can't afford the high price point," Whinery adds. "For those people, a bimetal blade is going to be a lot more forgiving."

ALLOYWOLF™ QXP comes with a proprietary second-generation aluminum titanium nitride coating with additional alloying elements that increases surface hardness, slows tooth wear and reduces heat buildup to allow faster cutting, the company adds.

"Customers will appreciate that the tooth geometry is actually the same as it was on the previous QXP," Whinery says. "Through internal and external testing, we found that we had a great foundation with our patented aggressive deep-gulleted tooth-form geometry from the previous generation."

Users can run the base model next-generation QXP just like its predecessor, Lenox says. The more powerful ARMOR ALLOYWOLF™ QXP, meanwhile, offers either double blade life or increased

productivity, depending on the user's needs.

Read More: *Lenox 360 Cuts Through Barriers to Bandsaw Performance*

Recommended operating specifications for the ALLOYWOLF™ QXP are available in Lenox's ***SawCalc*** application, which shows customers how to ***optimize tool life or productivity***, depending on their business priorities. Specifications for ARMOR ALLOYWOLF™ QXP will be added.

"We've seen our bandsaw customers cut a variety of different materials on one saw with one blade, so ALLOYWOLF™ QXP was designed to be effective on a wide range of materials," Whinery says. "It's pretty integral to bimetal blades that they have to be durable in a variety of situations."

How could the ALLOYWOLF™ QXP benefit your machine shop? Tell us in the comments below.

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