

Carbide Blades: Do the Math

Carbide-tipped band saw blades cost more up front, but readily pay for themselves in increased productivity.

Sawing is one of the earliest steps in the production process and is sometimes viewed as a crude low-tech operation. In reality, the Sawing Department can be a great source of cost savings and process improvement. One of the ways a shop can achieve these gains is by making the move from bi-metal to carbide-tipped band saw blades. Carbide blades offer longer blade life, faster cutting rates and superior part finish on even the most difficult-to-cut metals—all of which can deliver more money to the bottom line.

The move from high-speed steel to carbide is a common trend in a number of metal removal processes such as drilling, turning, band and circular sawing. With the increasing need for higher production, as well as growth in the use of hard-to-cut metals, carbide technology is gaining in popularity. The ability to deliver higher production more than offsets the higher cost of carbide.

Carbide-tipped band saw blades have actually been around for quite some time. Carbides are a composite of tungsten particles and a metallic binder. Compared to the teeth on a conventional bi-metal blade, carbide tips are much harder and offer better heat and wear resistance. The improved wear resistance keeps the teeth sharper for an extended period, leading to longer blade life and enabling faster cutting rates.

The effect on the cutting rate can be observed by using a cutting calculator, such as SAWCALC from LENOX. In this example (see SAWCALC Comparison), the calculator compares a bi-metal band saw blade (Contestor GT) to a coated carbide-tipped blade (Armor CT Black) in a stainless steel application. The end result: the shop that pays for a premium carbide-tipped blade can produce nine times more parts per eight-hour shift. More parts on the floor means more orders out the door. It also

translates into additional savings in the form of lower labor costs and postponed capital expenditures for new sawing machines.

In addition to increased production, carbide-tipped band saw blades deliver an improved surface finish. In many cases, a cut part will require additional processing steps downstream in order to refine the finish. By producing a smoother finish initially, the carbide blade can reduce the number of secondary processes required, which saves both time and money.

Some of the growth in the carbide band saw category can be attributed to the needs of the automotive, aerospace, power generation and defense industries, to name a few, which are looking for harder, stronger and lighter metals. Development of advanced materials such as tool steels, stainless, titanium and nickel alloys allows these industries to build lighter, faster planes and cars. Yet the new, harder grades pose cutting challenges for some bi-metal blades. Carbide-tipped blades can cut longer and at higher speeds, ultimately delivering a significantly lower cost per cut despite the initial sticker shock.

In order to run the blades properly and get the optimum level of performance, it's important to have the proper band saw equipment and a well-trained operator to achieve the necessary band speeds. Bi-metal band saw blades will continue to be a viable solution for cutting standard and difficult-to-cut metals, but carbide bands are a great solution for shops that want to minimize bottlenecks and achieve even higher production rates. ■

LENOX, East Longmeadow, Mass., manufactures a range of tools and band saw blades. For more information, call 800-642-0010 or visit www.lenoxtools.com.

Editor's note: This article was contributed by the experts at LENOX.

SAWCALC Comparison

1 ▶ MACHINE KASTO KASTOTEC A-5

2 ▶ MATERIAL 17-4PH

3 ▶ DIMENSIONS 8" Solid Round

4 ▶ VISING Single Piece

5 ▶ CONDITIONS Bal., Flood, 12", 30 KSI, 0"

Blade Type
 Carbide
 Bi-Metal

RECOMMENDATIONS

▶ BLADE Contestor GT x 22.5" x 2 x 0.063 x 1.4/2.0

▶ BAND SPEED 65 FPM

▶ FEED RATE 0.29 IPM

▶ BREAK-IN INSTRUCTIONS

▶ CUT TIME 00:27:35

1 ▶ MACHINE KASTO KASTOTEC A-5

2 ▶ MATERIAL 17-4PH

3 ▶ DIMENSIONS 8" Solid Round

4 ▶ VISING Single Piece

5 ▶ CONDITIONS Bal., Flood, 12", 30 KSI, 0"

Blade Type
 Carbide
 Bi-Metal

RECOMMENDATIONS

▶ BLADE Armor CT Black x 22.5" x 2 x 0.063 x 1.8/2.0

▶ BAND SPEED 270 FPM

▶ FEED RATE 2.60 IPM

▶ BREAK-IN INSTRUCTIONS

▶ CUT TIME 00:03:05

Using a carbide-tipped blade, the stainless bar in this example can be cut nine times faster than with a standard bi-metal blade, according to LENOX's SAWCALC cutting calculator.