

# THE PERFECT FIT

by Lisa Gordon



This edgebonded shim features 20 layers at 0.002" each. Shimco Photo

An aircraft is a technological wonder and a thing of beauty — the sum of thousands of parts all working in harmony to achieve flight. And while countless parts go into the making of a new helicopter or fixed-wing aircraft, perhaps none is as unobtrusive, yet as essential, as the humble shim.

Shims are simply thin pieces of metal, wood or other material — often but not always tapered — that are used to fill small gaps between parts or objects. Carpenters use wooden-wedge shims to level surfaces or fill gaps between materials. And, maybe somewhat surprisingly, aircraft manufacturers have critical uses for shims, too.

Shimco North America is a Canadian company that specializes in the production of shims for aerospace, defense and industrial use. Established in 1985 in Markham, Ont., it is the only company of its kind in Canada and one of very few aerospace shim manufacturers in the world. Over the last 20 years or so, Shimco's product offerings have evolved to focus largely on aerospace applications. Today, it manufac-

tures several different types of customized shims: solid, laminated, edgebonded and tapered.

Shimco's president, Peter Voss, said that about 80 percent of the company's business is rooted in the aerospace/defense niche, while the remaining 20 percent is based on industrial products. Its biggest contracts are with Bell Helicopter and Bombardier Aerospace, but Shimco also does work for other well-known aviation OEMs (original equipment manufacturers) worldwide, including Airbus, Embraer, Honda Aircraft Co. and Mitsubishi Aircraft Corp.

"Shims have various uses in aviation," Voss told *Vertical*. Tapered shims, for example, are designed to deal with angles and curves; they ensure a close-tolerance fit whenever relatively large spaces occur between adjacent parts. These shims are inserted as far as they can go and then the excess is removed.

"The more advanced shims are the laminated and edgebonded products," he continued. "We

machine them from aerospace-grade aluminum, titanium, stainless steel, brass or Kapton [a polyimide film developed by DuPont] that we laminate on site. Edgebonded shims are used in helicopter engine and transmission assemblies, for example, to eliminate the tiny spaces between parts that result from allowable manufacturing tolerances. The manufacturer actually takes off the layers they need, as opposed to removing what they don't need, as in a laminated shim. You peel off the thickness you need to get the perfect fit."

Voss has learned a lot about shims over the past 12 months. He and his business partner purchased Shimco from its original owners in early 2011; and at the time, he knew nothing about the company's products. He retained key upper management personnel, invested heavily in company infrastructure, upgraded the IT system and hired a quality manager to implement lean manufacturing concepts.

"Our output is 20 percent higher than last year, and it's expected to be another 25 percent higher next year," said Voss, adding that the company currently produces about 600,000 parts a year. "Business is really booming. We're adding a second shift in early 2012 that will double our capacity."

The efforts of Voss and his 25 employees have not gone unnoticed. Just recently, Shimco received Bell Helicopter's coveted "premier supplier" designation for the first time. To receive the designation, a supplier must meet a number of stringent quality and delivery standards, and achieve a high score during an on-site inspection.

"Bell came in August," said Voss. "They looked at IT systems, quality systems, health and safety systems, information reporting, financial results. . . they went through everything. You had to have a four or five [out of five] in every category to make it."

Earning the Bell designation was definitely a feather in Shimco's cap, said Voss, but the company is aiming even higher. Future expansion plans include "moving up the food chain" by producing component kits for sub-assemblies, and signing new contracts with other major aircraft manufacturers. As markets tighten and OEMs consolidate their preferred supplier lists, Voss and his staff are determined to see Shimco be the perfect fit.