

Chart 1

Tooling Analysis		3/4" ceramic insert cutter	
RPM	1250	RPM	4000 (MACHINE MAX)
IPM	12 IPM	IPM	50 IPM
Depth of Cut	.015"	Depth of Cut	.045"
Step Over (Pic)	.375"	Step Over (Pic)	.1875"
Entry Mode	2° RAMP	Entry Mode	.4° RAMP
Coolant Type	WATER SOLUBLE	Coolant Type	VORTEC AIR BLAST
Parts Machined	1	Parts Machined	3
Insert Condition	JUNK	Insert Condition	WORN(NEED ROTATED)
TOTAL CYCLE TIME	1:24(hr-min)	TOTAL CYCLE TIME	13:(min)
		Difference Cost Savings	1:11(hr-min) @\$72.85=\$86.20

NOTE: Test performed on EL-MAX@ 25-30 RC.

NOTE: 30 ipm changed to 50 ipm, cutter performed same, surface finish rougher.

Saving Time/Money

Once Premium Building started using the Excelsator, the company quickly realized "incredible time and money savings," Shepline states (see Chart 1). "The bottom line is this tool enables us to continuously machine three to four parts before we had to rotate the inserts," he explains. "Previously, we were forced to change cutters two times just to finish one part."

As a result, Premium Building Products also purchased a new machine—a Leadwell (Plano, TX) MCV-OP machining center with an rpm capacity of 6000 rpm (versus the machine the company had at 4000 rpm)—which ultimately means faster machining. This machine takes better advantage of the speeds the

Excelsator brings to its work, Shepline maintains.

Premium Building Products is extremely satisfied with its new cutting tool and the level of customer service it receives from Greenleaf. "During our R&D, other cutting tool manufacturers would leave us with a broken tool, telling me that they would get with their engineers and be in touch," Shepline comments. "I never heard from them again. On the other hand, with Greenleaf, I had to all but ask them to leave the building. They were determined to make our process better—and they did."

MMT



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Ceramic Cutting Tools: A Cut Above

Continuous machining with new ceramic mill reduces machining time by 88 percent—saving time and money.

Sherry L. Baranek

In the vinyl extrusion industry, Premium Building Products (West Salem, OH) also manufactures and repairs its own molds. Recently, the company downsized its machine shop, reducing 12 machinists to just three journeyman machinists, one machinist and one fabricator. Luckily, the company had already been working with a new cutting tool that reduced machining time so it didn't suffer with the reduction in manpower.

Greenleaf Corporation's (Saegertown, PA) Excelsator™ Mills—a combination of indexable ceramic inserts and small diameter milling cutters—reduced Premium Building Products' cycle times by 88 percent and allows the company to continuously machine its steel. The tool also allowed the company to eliminate running a second shift on its Okuma Howa (Charlotte, NC) machining center.

Time for a Change

In operation since 1979, Premium Building Products' entire facility is 176,000 square feet—with 6,000 square feet of this space devoted to the company's machine shop. According to Dan Shepline, supervisor/programmer/designer and journeyman tool and die maker, the company's work with common and exotic grades of stainless steel are very unforgiving to standard carbide tooling. He was faced with the challenge of excessive tooling wear, which caused difficulties with the machining process and cost.

To further complicate matters, the parts Premium Building manufactures are part of one main assembly, which must match within +/- .002". "The finish is the most important as our finished parts require a mirror surface free of defects," Shepline explains. "The parts must be hand polished regardless of the machining operation, but the Greenleaf tool leaves minimal tool marks left over to polish—compared to carbide tooling." The cutting tools Shepline had been using also left him unable to complete simple machining operations without needing to change the cutting tool.

After contacting a number of cutting tool manufacturers, Shepline was impressed with Greenleaf's knowledge of cutting tools—and by the fact that it was the "only organization willing to initiate the development of a prototype tool, which is now a member of their product line, where as others tucked their tail

Premium Building Products in West Salem, OH, is in the vinyl extrusion industry. It provides vinyl replacement windows, landscape fence and vinyl siding for Alside Corporation, a leading manufacturer of vinyl siding and accessories for the residential and commercial remodeling and new construction markets.



Photo courtesy of Premium Building Products.

Premium Building Products' newest mill is capable of 6,000 rpm with a 1,000 mm/min feedrate.

and ran. When I initially contacted other tooling vendors, most of them were more than eager to stop in and demo a cutter that they thought would work, but after a few test cuts using their 'slow' machining parameters (not the parameters that I was looking for). We were left with a worn tool that they wanted to sell me.

"I don't mean to criticize other cutting tool manufacturers, but these results were not acceptable to me," Shepline continues. "As for Greenleaf, they would bring in their prototype tool and ask me what parameters I wanted to run the tool, so we did—successfully—and then they would do some calculations based on the results and inform me that I had not even begun to see the capacities of this tool."

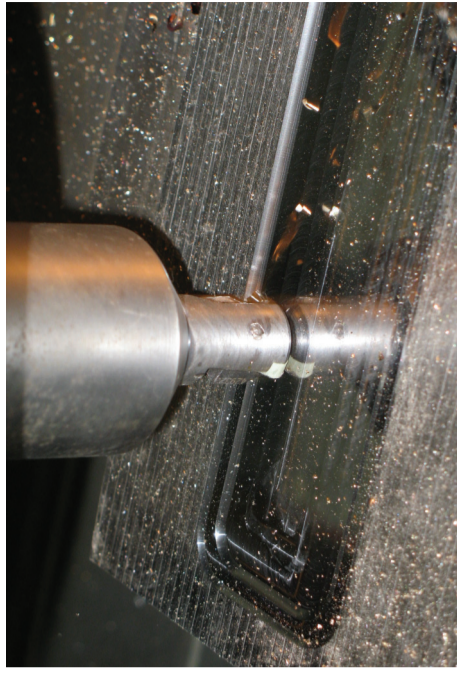


Photo courtesy of Greenleaf Corporation.

The Greenleaf Excelsator™ Mill cuts stainless steel at 4,000 rpm with an xy feedrate of 70 ipm and .040 depth-of-cut.