



EXOCARB® WXL SQUARE END MILL



SNAPSHOT

BACKGROUND

Customer was machining large volumes of pedicle screws and needed to create small diameter slots around the part. The customer's current process was long with 24 passes per slot, with 4 slots per part.

GOALS

Our goal was to reduce the overall cycle time. To do this we focused on reducing the number of passes per slot.

DETAILS

INDUSTRY

Medical

PART

Pedicle Screw

MATERIAL

Titanium 6Al4V

MACHINE

Swiss Machine

ORIGINAL TOOLING

Solid Carbide Square End Mill
0.03125" | 3 Flute | TiAlN

NEW TOOLING

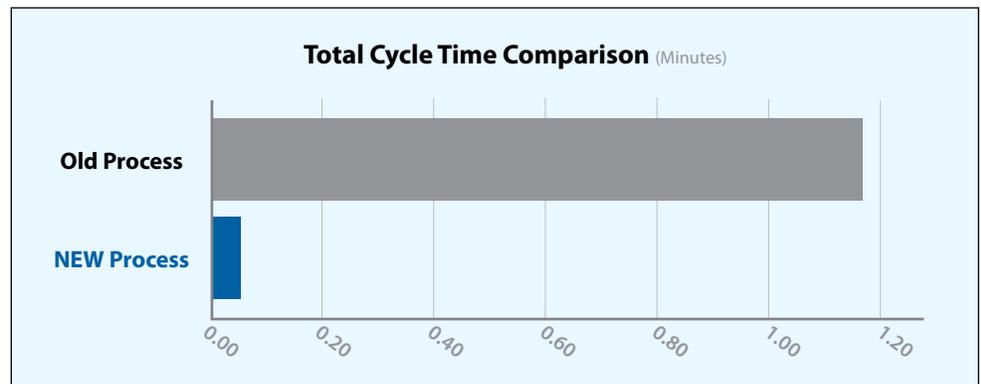
EXOCARB® WXL Square End Mill
0.0354" | 2 Flute | WXL

NEARLY \$60,000 SAVED ON 1 PROCESS

THE STRATEGY

The current tool was a 3 flute tool. Being such a small diameter tool, we wanted to maximize the chip pocket room in order to increase the axial depth of cut. We recommended our 2 fluted WXL series end mills. The wall thickness was approximately 1xD of the tool diameter, so we recommended full slotting.

	Original Process	NEW Process
Tool Diameter (Inch)	0.03125"	0.0354"
Cutting Speed (RPM • SFM)	6,500 • 53	6,500 • 60
Feed (IPM • IPT)	13.065 • 0.00067	13 • 0.001
Depth of Cut (Aa/Ar)	0.03" • 0.03125"	0.072 • 0.0354
Metal Removal Rate	0.001 in ³ min	0.03 in³ min
Cycle Time (Minutes)	1.18	0.05
Tool Life (# of Parts)	2,500	5,000





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THE RESULTS

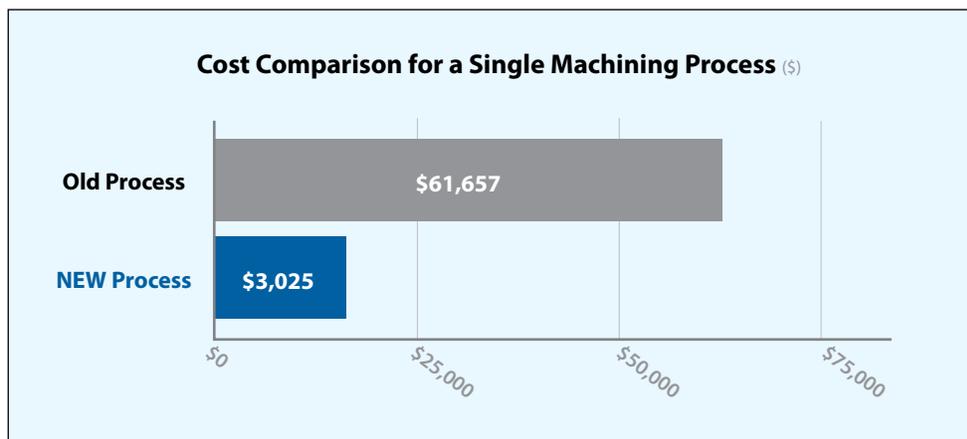
We were able to successfully machine one pass per slot, simultaneously doubling tool life with reduction of machining cut time in titanium coupled with the high oxidation temperature of our WXL coating.

- Able to machine **one pass per slot**.
- **Doubled tool life**.
- **Saved nearly \$60,000** on this single machining process.

Results Overview	
Cycle Time Saved Per Part (Minutes)	1.13
Number of Parts Per Year	44,730
Annual Cycle Time Saved (Minutes)	50,385
Annual Machine Cost Savings	\$58,783
Tool Life Productivity Improvement (%)	100%
Annual Tool Change Cost Savings	\$52.19
Total Machining Cost Saved Annually (Single Process)	\$58,632

THE CONCLUSION

With such a huge reduction in cycle time, we were able to **save this customer nearly \$60,000 on this single machining process (10 Processes per part)**. Along with other cycle time reductions on this part through the S4M program, OSG **saved this customer nearly \$200,000** on the production of this part alone.



NEARLY \$60,000 SAVED ON 1 PROCESS



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