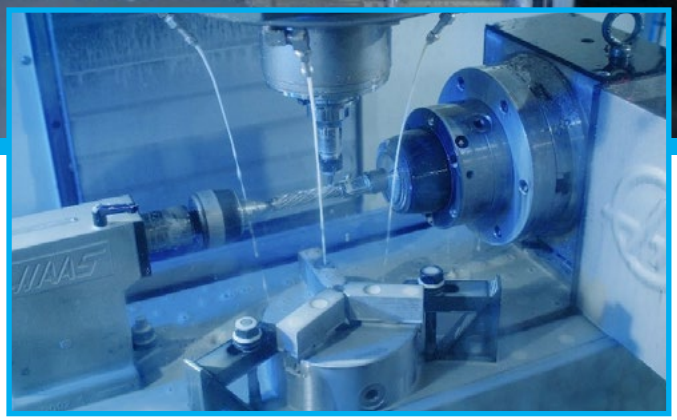
CUTTING EDGE CASE STUDIES

DRILLING
FIREARMS
416 STAINLESS

EXOCARB® WXL-EBD



SNAPSHOT

BACKGROUND
A firearms manufacturer was interested to see if they could increase their productivity and tool life when milling the flutes of their pistol barrel.

GOALS
Customer needed additional machine capacity to keep up with increased demand. Their main goal was to decrease cycle time and improve tool life.

DETAILS

INDUSTRY
Firearms

PART
Gun Barrel

MATERIAL
416 Stainless Steel

MACHINE
HAAS VF-3

SPINDLE
CT40

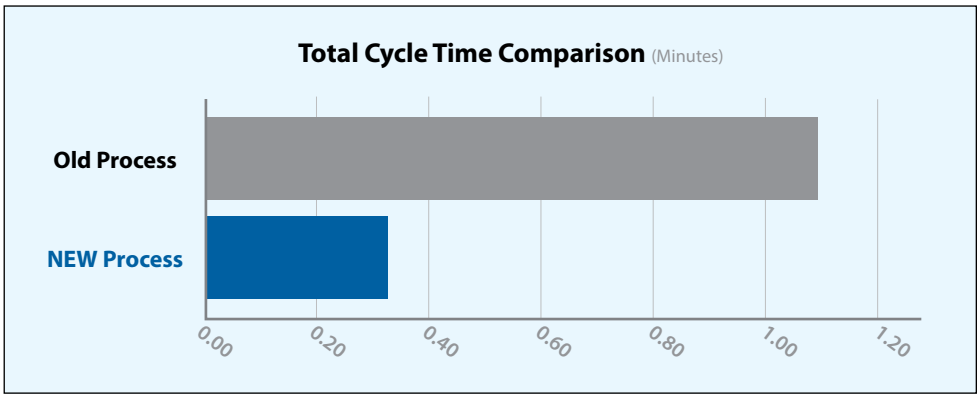
ORIGINAL TOOLING
Carbide Ball Nose End Mill
0.25" | 2 Flute | TiAlN

NEW TOOLING
EXOCARB® WXL-EBD
0.25" | 2 Flute | WXL

OVER $278,000 IN ANNUAL SAVINGS!

THE STRATEGY
OSG decided to test our WXL ball nose end mill in this application. The WXL tool had a superior tool design and coating to the current tool. Additionally the WXL coating has attributes such as hardness, heat resistance and a low coefficient of friction that would assist in this application.

	Original Process	NEW Process
Tool Diameter (Inch)	0.25"	**0.25"**
Cutting Speed (RPM • SFM)	7,650 • 501	**14,750 • 966**
Feed (IPM • IPT)	15.3 • 0.001	**30 • 0.001**
Depth of Cut (Aa/Ar)	0.03" • 0.25"	**0.03 • 0.25**
Metal Removal Rate	0.11 in^3 min	**0.22 in^3 min**
Cycle Time (Minutes)	1.08	**0.34**
Tool Life (# of Parts)	25	**200**



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THE RESULTS

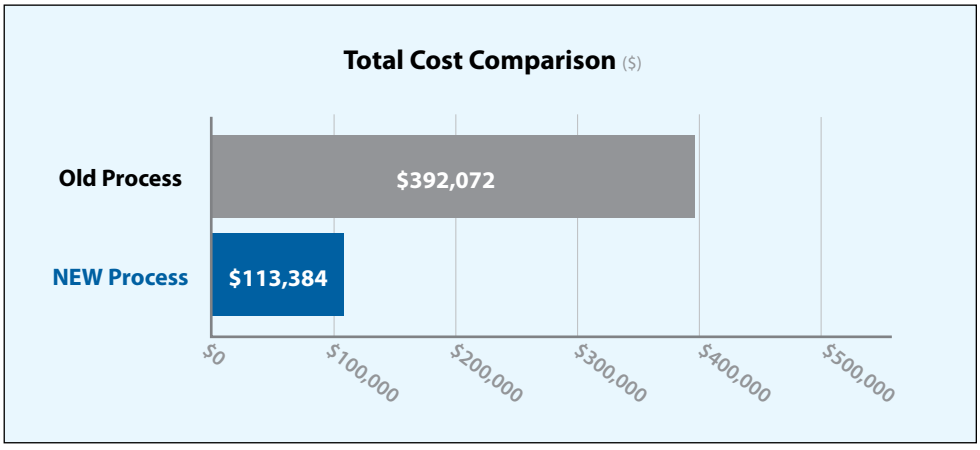
OSG was able to successfully achieve all of the customer's goals. Due to the high oxidation temperature of the WXL coating, we were able to nearly double the cutting speed. This resulted in a cycle time reduction from 65 seconds to 20 seconds. Additionally, tool life increased from 25 parts per tool to an amazing 200 parts per tool.

- Tool life improved from ***25 parts per tool to 200 parts per tool***.
- Cycle time reduced from ***65 seconds to 20 seconds.***
- ***A total annual savings of over $278,000!***

Results Overview	
Cycle Time Saved Per Part (Minutes)	**0.74**
Number of Parts Per Year	**144,000**
Annual Cycle Time Saved (Minutes)	**106,481**
Annual Machine Cost Savings	**$177,468**
Tool Life Productivity Improvement (%)	**700%**
Annual Tool Change Cost Savings	**$1,680**
Total Machining Cost Saved Annually	**$278,688**

THE CONCLUSION

The customer was able to save roughly 2,782 total hours of machine time per year and decrease their tool usage from 5,760 tools/year to 720 tools/year. In total customer was able to ***save over $278,000!***



OVER $278,000 IN ANNUAL SAVINGS!

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