



Scan Code to See the Z-CARB HPR in Action!

Total Cost Savings  
**\$184,185**

### Industry

Firearms

### Material

Steel Forging

### Product

Z-Carb Series HPR

5-Flute Endmill

Ti-NAMITE-M (TM) Coating

### Application

Milling

### Competitor Tool

0.375in 5-Flute Solid End Mill

### Coolant

Flood

### SGS Tool Information

0.375in Cutting Dia. (DC)

Variable Pitch

0.500in Length of Cut

2.50in Overall Length

37 degree Helix Angle

### Goals

This firearms end-user needed to produce 135,000 total parts annually. With a total annual job cost exceeding \$250,000, their goal was to reduce overall total job to under \$100,000. To achieve this goal, KYOCERA SGS application engineers looked for ways to increase tool life, thus decreasing cost per part.

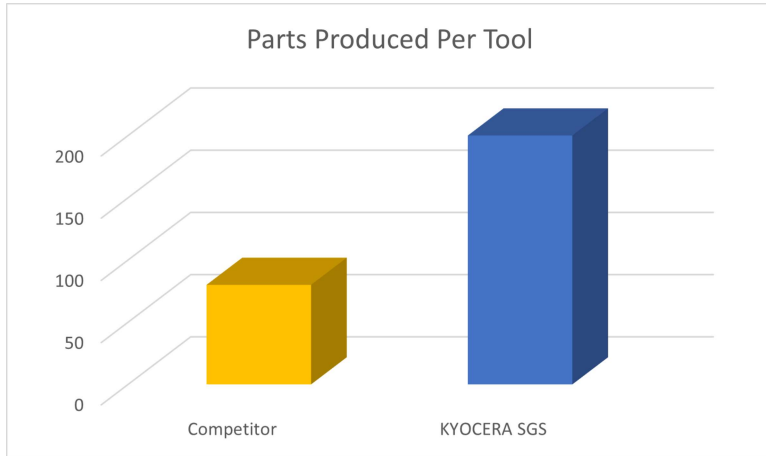
### Strategy

The existing application utilized a 6-flute solid, high-feed endmill, taking 6 passes at 0.014" axial DOC. The new strategy utilized a 5-Flute Z-Carb HPR taking a single pass at 0.06" axial DOC.

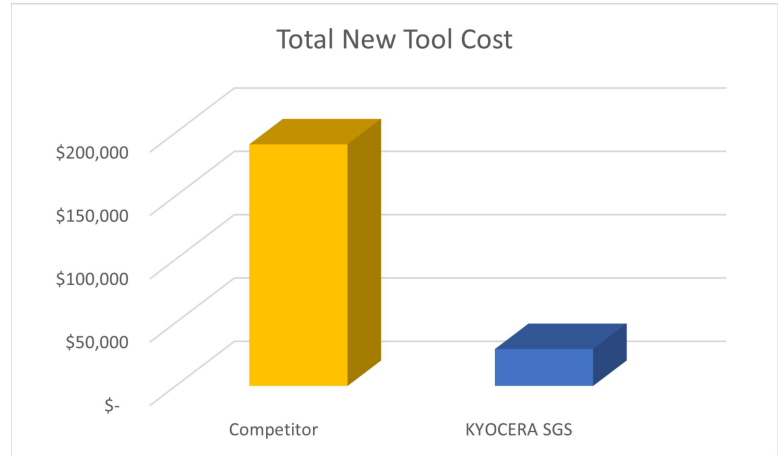
	<b>KYOCERA SGS End Mill</b>	<b>Competitor End Mill</b>
<b>Cutting Diameter (DC)</b>	0.375"	0.375"
<b>RPM</b>	6101	7517
<b>SFM</b>	599.42	738.55
<b>Feed (IPM)</b>	79.3	338.3
<b>IPR</b>	0.013	0.045
<b>RADIAL DEPTH (AE)</b>	0.2500"	0.2500"
<b>AXIAL DEPTH (AP)</b>	0.0600"	0.0140"

## Conclusion & Results

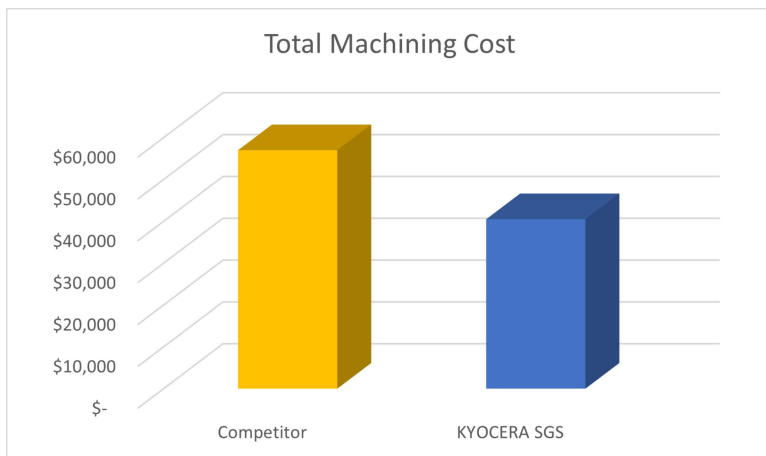
Using the SGS Z-Carb HPR end mill, the customer was able to increase the axial DOC per pass from 0.014" to 0.06", thus reducing the number of passes from 6 to 1. Cost per tool decreased from \$113 to \$43 and tool life increased from 80 to 200 parts. The number of tools required annually to produce the 135,000 parts decreased from 1688 to 675. The combination of these changes resulted in decreases in total machining cost, new tool cost, and tool change cost resulting in annual savings of over \$184,000.



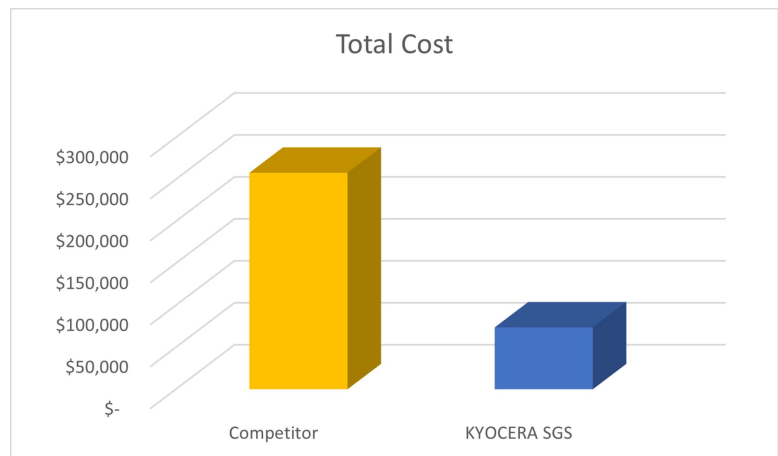
*KYOCERA SGS was able to increase the parts per tool from 80 to 200.*



*KYOCERA SGS was able to reduce the annual tool cost from \$190k to \$29k*



*KYOCERA SGS was able to reduce the annual total machining cost from \$57k to \$40.5k*



*KYOCERA SGS was able to reduce the annual total machining cost from \$257.8k to \$73.7k*



**\$184,185 Annual Cost Savings**  
**85% Improvement in New Tool Cost**  
**150% Increase in Parts per Tool**

