

Z-CARB AP



Kyocera SGS Precision Tools Case Study

INDUSTRY

Aerospace

MATERIAL

6AL4V Titanium (Hardness 34-45 Rockwell)

PRODUCT

KSPT Z-CARB AP Ball Nose End Mill

APPLICATION

37.5% Profile at 66.6% Depth of Cut

COMPETITOR

Comparable 4 Flute End Mill

COOLANT

FLOOD

TOOL INFORMATION

1" DIA / 1.5" LOC / 6.0" OAL

GOALS

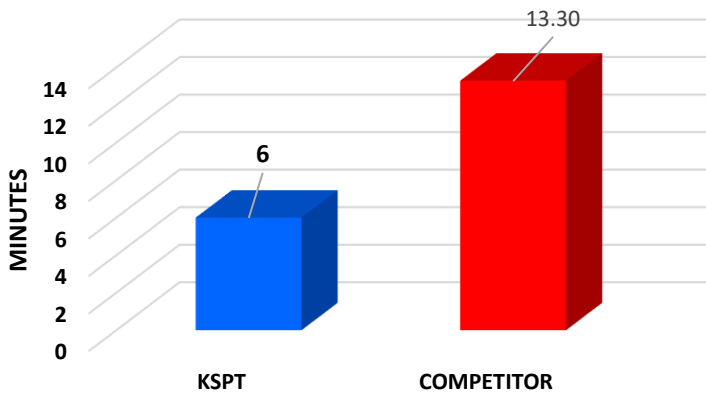
The goals of this study were to significantly reduce job cost through increasing tool life, reducing machining time and improving manufacturing efficiency.

STRATEGY

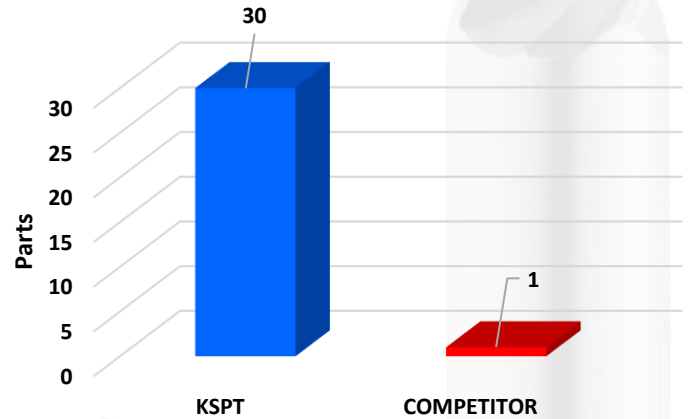
KSPT approached this job with a 4 flute Z-Carb high performance end mill. Due to its enhanced corner geometry and chatter suppression technology, KSPT's Z-Carb AP was able to capacitate higher speed and feed rates, while still producing an optimal finish.

	KSPT	COMPETITOR
TOOL DIAMETER	1"	1"
SPEED	902 RPM	1000 RPM
FEED	11.8 IPM	4.0 IPM
RADIAL CUT (AE)	.3750	.3750
AXIAL CUT (AP)	1"	1"
CYCLE TIME	6 MINUTES	13.3 MINUTES

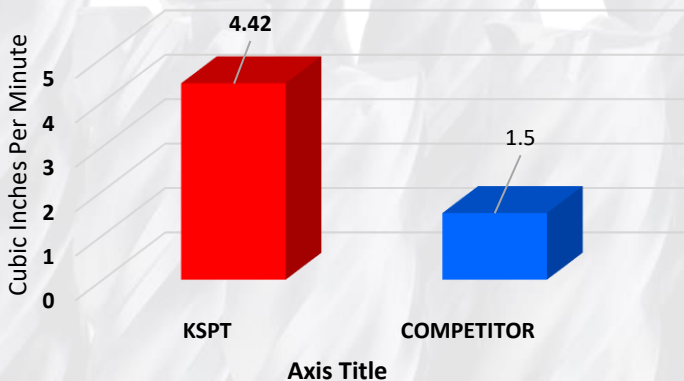
CYCLE TIME



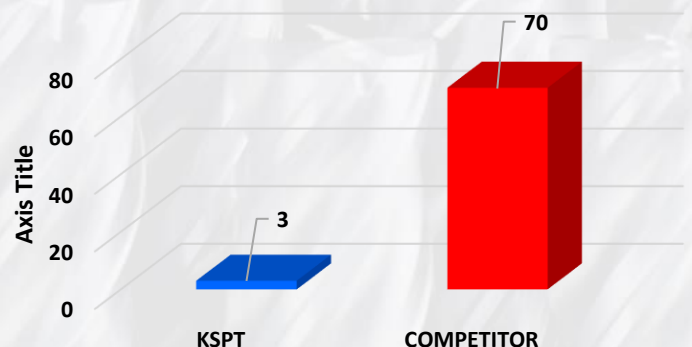
Parts Produced by A New Tool



Material Removal Rate



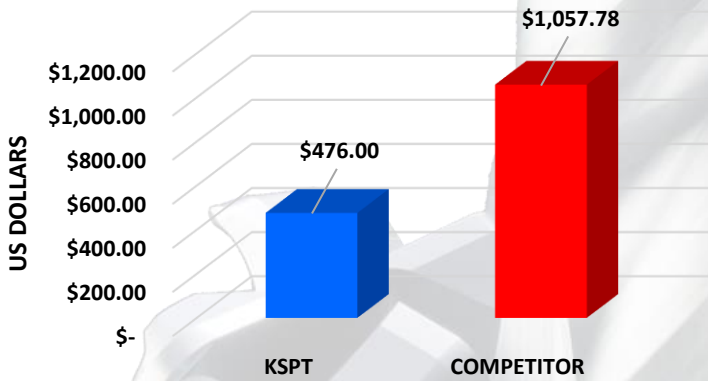
NEW TOOLS REQUIRED TO COMPLETE THE JOB



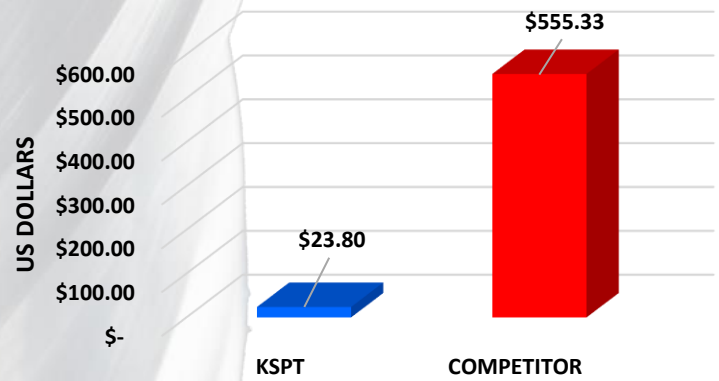
RESULTS

6AL4V titanium is a corrosion resistant and had an excellent strength to weight ratio, which makes it an ideal material for the aerospace industry. Unfortunately, it is relatively difficult to machine and tends to cause shorter tool life because tools having to be run at slower speeds. The Z-Carb AP (ZAP) with its AlTiN coating was the tool the engineer decided to apply to this job. The decision was a good one. The material removal rate for the Z-Carb AP 3 times that of the competitor's tool. Additionally, the cycle time was reduced by more than half! The tool life was the biggest improvement though in that the Z-Carb AP produced 30 times as many parts per new tool. That means a lowered tool change cost and a total new tool cost that was reduced by over 95%. When the machining cost amount is combined with the amount saved in new tools, the customer experienced a total cost savings of \$25,211.05! An 85% reduction in final cost to the customer!

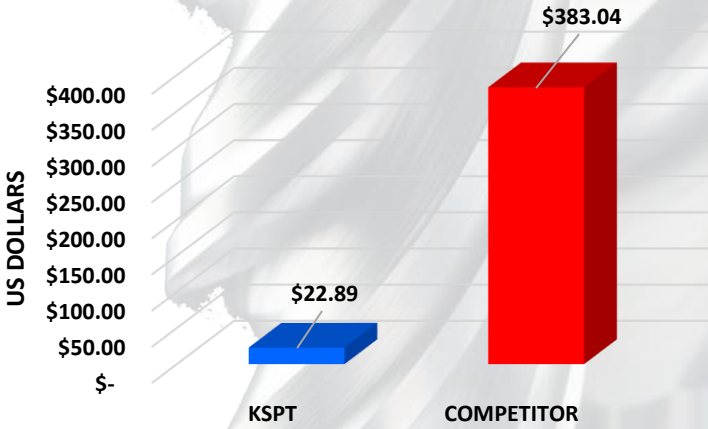
TOTAL MACHINING COST



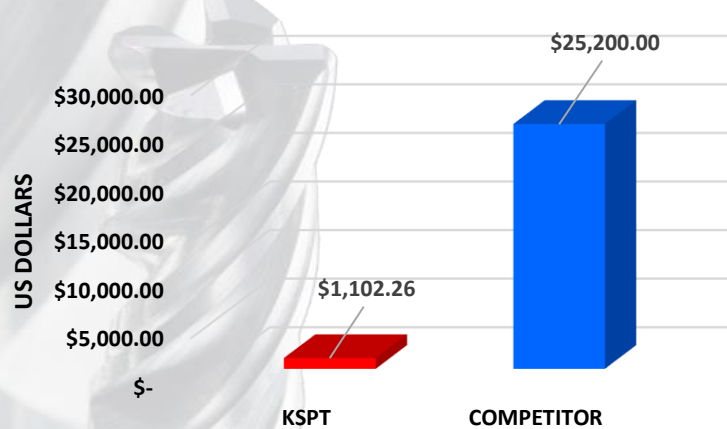
TOOL CHANGE COST



TOTAL COST PER PART



TOTAL NEW TOOL COST



TOTAL COST

