

# Z-CARB AP



Kyocera SGS Precision Tools Case Study

## INDUSTRY

Aerospace

## MATERIAL

A286 High Nickel Alloy

## PRODUCT

KSPT Z-CARB AP (Advanced Productivity)

## APPLICATION

8% Profile at 1xD Depth of Cut

## COMPETITOR

Comparable 4 Flute End Mill

## COOLANT

FLOOD

## TOOL INFORMATION

.1250 DIA / .3750 LOC / 1.5 OAL

## GOALS

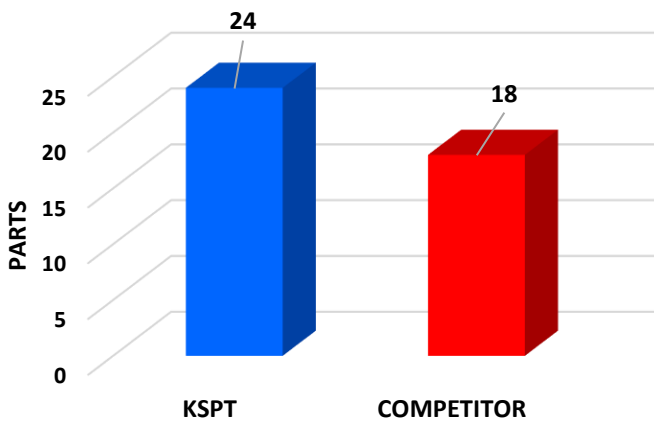
The goals of this study were to significantly reduce job cost through increasing tool life, reducing machining time and improving manufacturing efficiency.

## STRATEGY

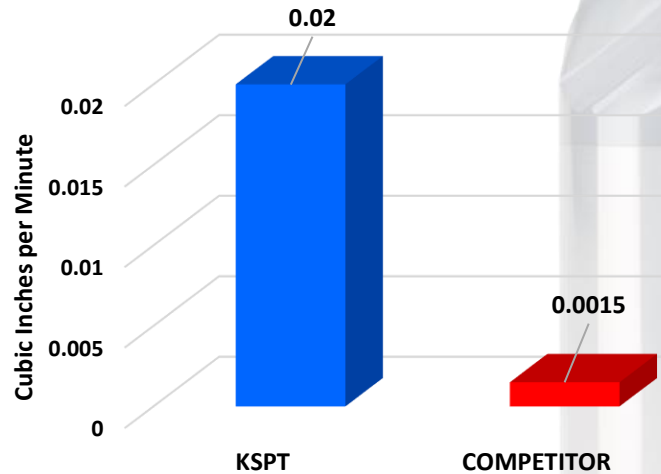
KSPT approached this job with a 4 flute Z-Carb high performance end mill. Due to its enhanced corner geometry and chatter suppression technology, KSPT's Z-Carb AP was able to capacitate higher speed and feed rates, while still producing an optimal finish.

	KSPT	COMPETITOR
TOOL DIAMETER	.1250	.1250
SPEED	6000 RPM	1200 RPM
FEED	12 IPM	1.2 IPM
RADIAL CUT (AE)	.01"	.01"
AXIAL CUT (AP)	.1250	.1250
CYCLE TIME	.78 MINUTES	7.75 MINUTES

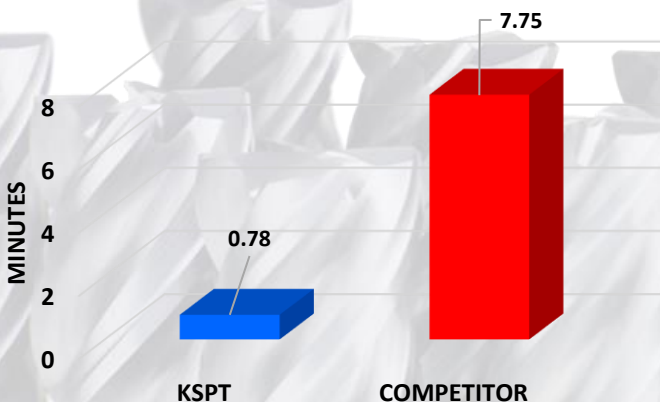
## PARTS PRODUCED BY A NEW TOOL



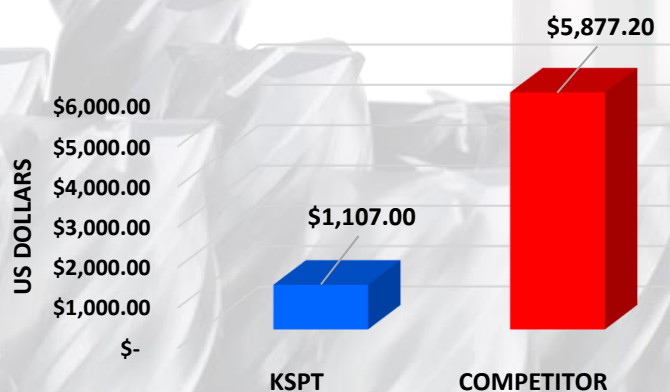
## MATERIAL REMOVAL RATE



## CYCLE TIME

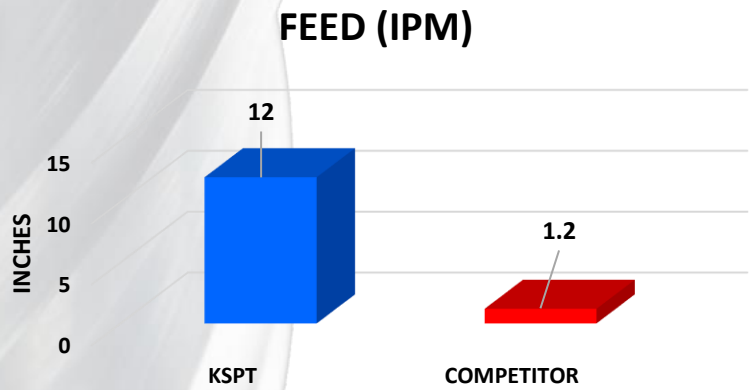
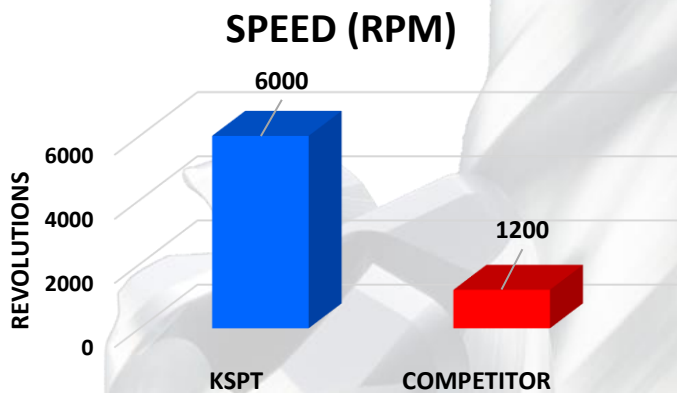


## TOTAL COST

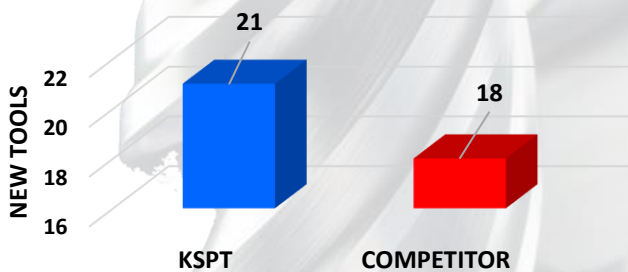


## RESULTS

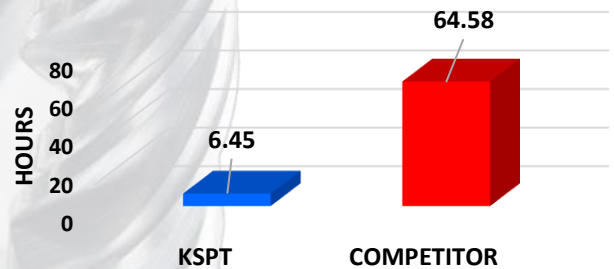
A-286 alloy is an age-hardenable iron-based superalloy for applications requiring long-term high strength. A 286 can be used in a variety of applications a few examples would be jet engine components, high temperature fasteners, springs, non-magnetic cryogenic equipment. The Z-Carb AP (ZAP) was the tool the engineer decided to apply to this job. The decision was a good one. The ZAP was able to capacitate a speed rate twice as fast and a feed rate ten times as fast as the competitor's tool. Thus, the material removal rate for the Z-Carb AP was over 92% higher than the competitor's tool. Additionally, the cycle time was reduced by almost 90% using the ZAP. With the use of a higher quality tool, the tool life for the job was improved by 25% Less tools used equals less money spent on new tools, and every customer likes that. These machining efficiencies produced a machining cut the machining cost to the customer by 90%. When the machining cost amount is combined with the amount saved in new tools, the customer experienced a total cost savings of \$4,770.20! An 82% reduction in final cost to the customer!



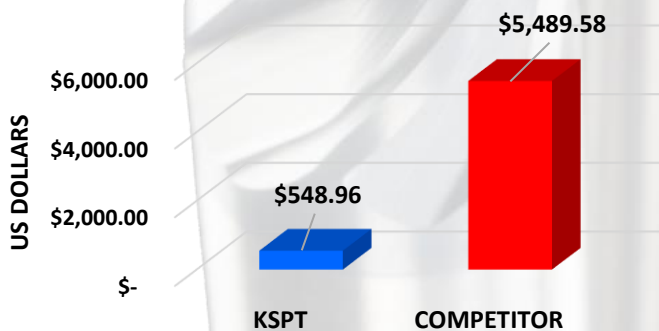
### NEW TOOLS REQUIRED TO COMPLETE THE JOB



### TOTAL HOURS OF MACHINING TIME



### TOTAL MACHINING COST



### TOTAL COST PER PART

