

M4 8XD Micro End Mill



Kyocera SGS Precision Tools Case Study

INDUSTRY



AEROSPACE MATERIAL

347 Stainless Steel (28 Rc HARDNESS)

PRODUCT

M4 8XD Micro End Mills

APPLICATION

Plunging

COMPETITOR

3 Flute Extended Reach Micro End Mill

COOLANT

Soluble Flood

TOOL INFORMATION

0.07" DIA / 0.21" LOC / 2" OAL



GOALS

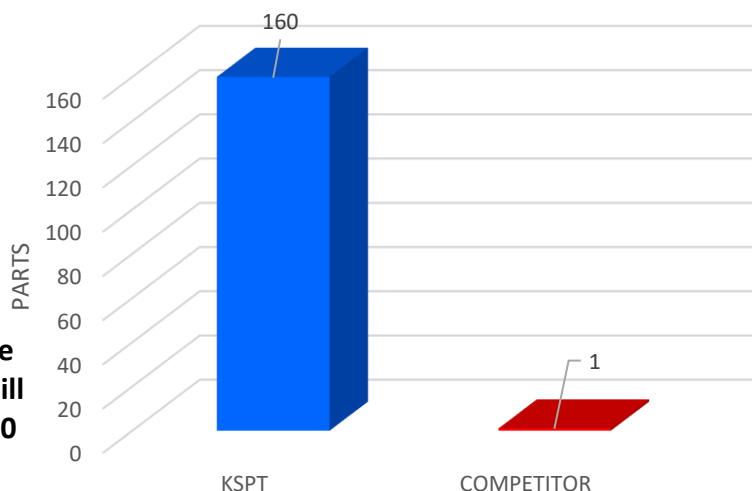
The goals of this study were to significantly reduce job cost through the implementation of superior tooling and increased manufacturing efficiencies.

STRATEGY

KSPT approached this job with a 4 flute 8XD Micro End Mill. The four flute design allows for higher feed rates and decreased deflection, improving productivity and surface finish. Advanced geometries that extend tool life, reduce chatter, cut cycle times, and improve part quality.

	KSPT	COMPETITOR
TOOL DIAMETER	.07"	.07
SPEED	6600 RPM	3400 RPM
FEED	4 IPM	2 IPM
RADIAL CUT (AE)	n/a	n/a
AXIAL CUT (AP)	0.38	0.38
CYCLE TIME	6 SECONDS	11.4 SECONDS

TOTAL PARTS AVAILABLE PER TOOL

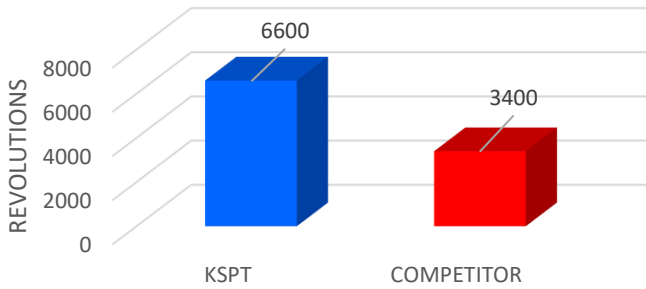


KSPT's 4 flute micro end mill produced 160 parts to the competitor's 1!!

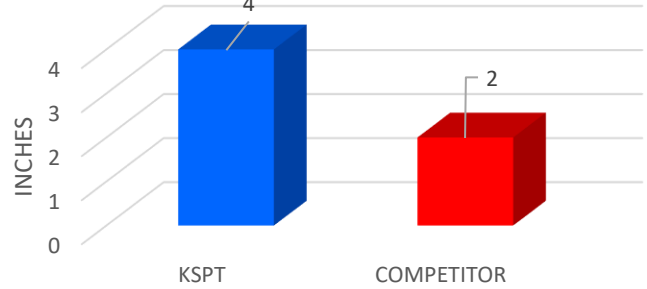
RESULTS

The overall findings of this study indicate although **KSPT's 4 flute micro end mill blew away the competitor's 3 flute tool** in efficiency and effectiveness. **KSPT's tool was able to capacitate a 48% higher speed and a 50% greater feed rate.** Those combined efficiencies were able to **cut the cycle time in half!** Also, because of the higher quality tool, the customer was able to **produce 160 parts per KSPT tool.** The competitor's 3 flute end mill was only able to produce 1 part per tool. Thus, the **tool change cost was reduced by over 99%!** Additionally, because KSPT only had to use 3 total tools to complete the job, the customer watched the difference in **new tool cost drop over 99%.** When everything was said and done, the **M4 8XD 4 flute micro end mill saved the customer a grand total of \$12,030.34!! That's a 98.88% cost reduction!!!** These tools, albeit small, are a huge step forward for micro machining.

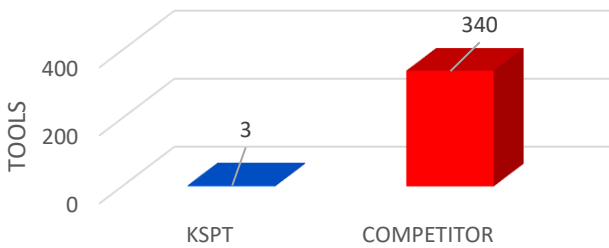
SPEED (RPM)



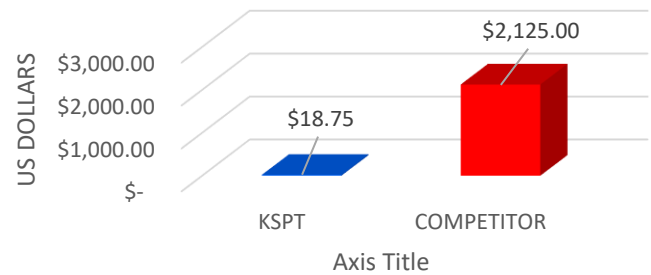
FEED (IPM)



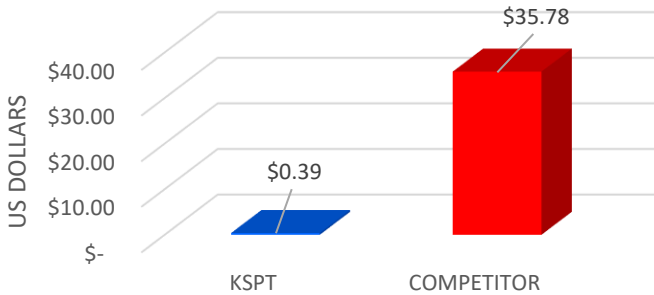
NEW TOOLS REQUIRED TO COMPLETE JOB



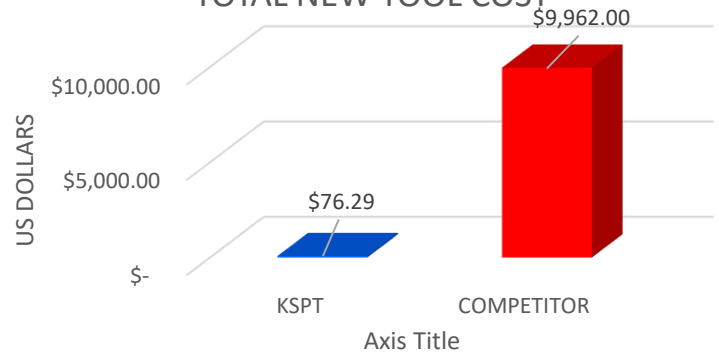
TOOL CHANGE COST



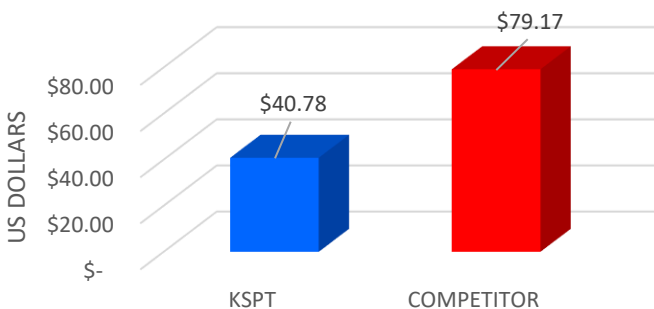
TOTAL COST PER PART



TOTAL NEW TOOL COST



TOTAL MACHINING COST



TOTAL COST

