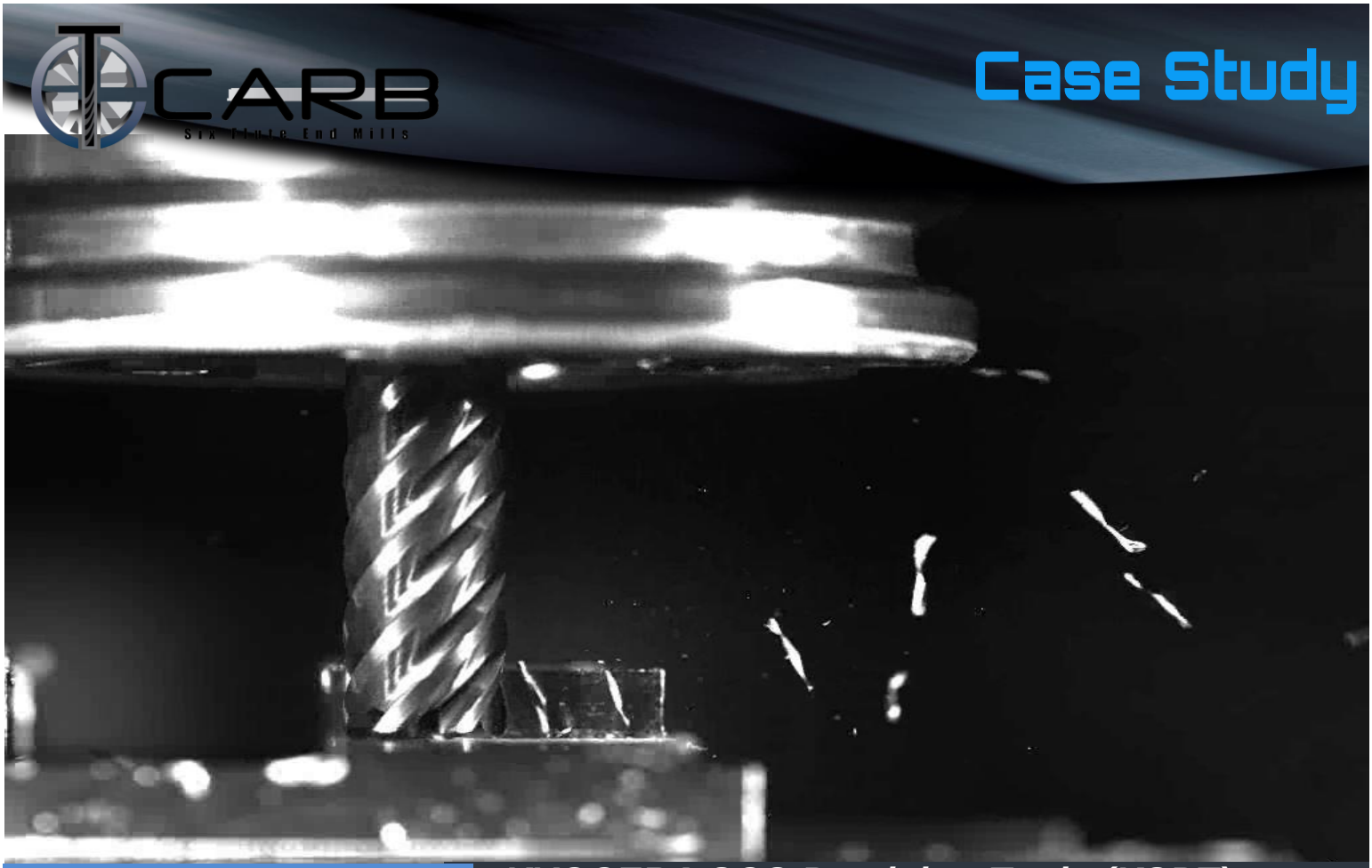
T-CARB
Six Flute End Mills

Case Study



CASE DETAILS

DISTRIBUTOR:
MSC Industrial Supply – Gilbert AZ

INDUSTRY:
Aerospace – Jet Engine

COMPONENT:
Jet Engine Mounting Bracket

MATERIAL:
Rene 77 Alloy Forging

PRODUCT:
Series 51 T-Carb End Mills TI-NAMITE-X Coated

KYOCERA SGS Precision Tools (KSPT) saves an end user $415,282 annually by dramatically reducing cycle time and increasing material removal rate.

BACKGROUND:

KSPT has worked closely with MSC Industrial Supply and this particular end-user in recent years. Many cost saving achievements have been realized, with this example being the most recent and strongest to date. The end user approached MSC and KSPT with an intriguing challenge. How can production efficiency be improved without adding CNC machining equipment?

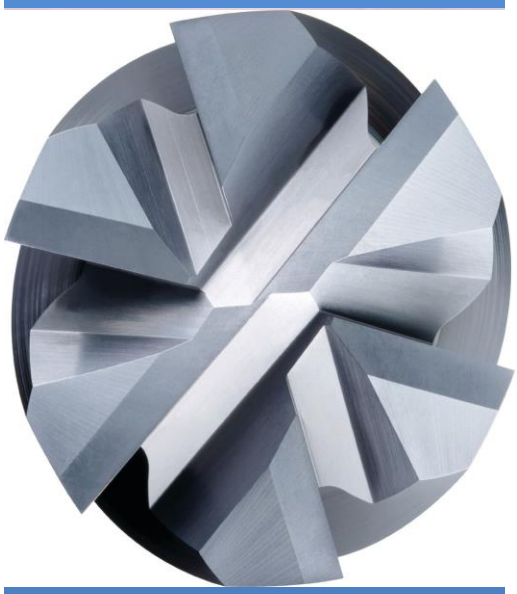
Building on application engineering support from the KSPT Innovation Center, field sales professionals from MSC and KSPT were able to save the end user more than $400,000 annually through process improvement.

GOALS:

The end user goal was to achieve cost savings by reducing cycle time and increasing material removal rate without purchasing additional CNC machining equipment.

KYOCERA

SGS
Solid Carbide Tools



APPLICATION:
Trochoidal Face Milling

CNC INFO:
Haas VF2

SPINDLE:
Cat 40 spindle

COMPETITOR:
1/2" 4fl ALTIN

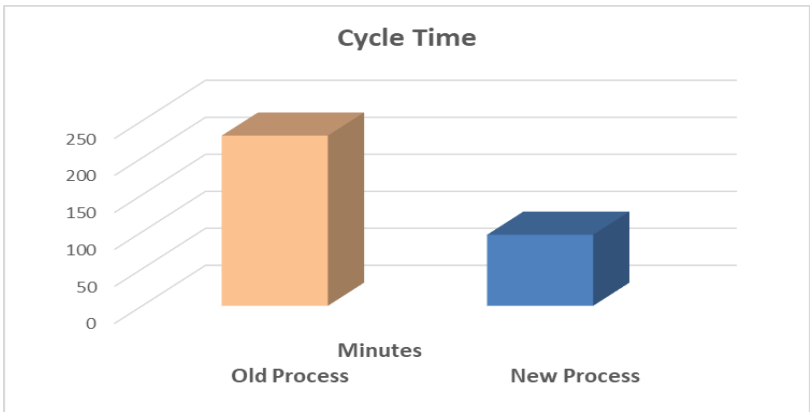
COOLANT:
Soluble Flood

TOOL INFORMATION:
3/8 DIA
1" LOC
2.5' OAL

THE STRATEGY:

Introducing the KSPT Series 51 T-Carb allowed for employment of a highspeed chip thinning trochoidal milling approach on the part. This new approach involved milling 1 pass at .190" axial depth with higher speed and feed rates. The previous conventional method was to take 19 passes at .01" axial depth.

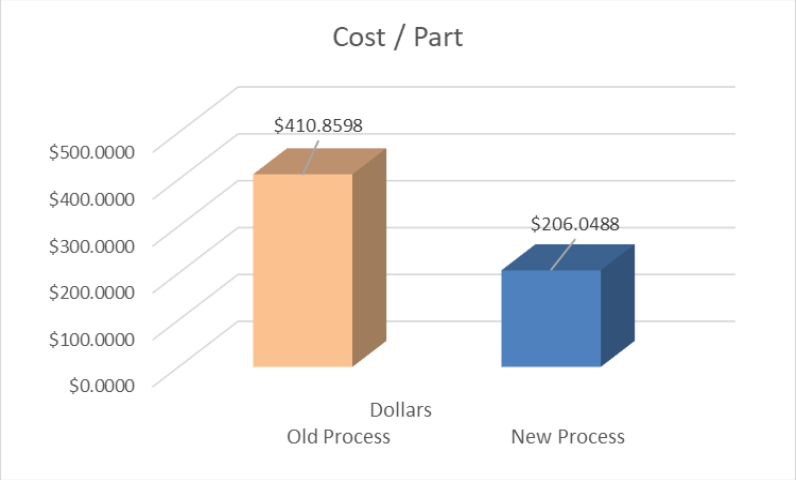
	New Process	Old Process
Tool Diameter	.375	.500
Speed	220 SFM	100 SFM
Feed	40.3 IPM	7.0 IPM
Radial Cut (Ae)	.750"	.210"
Axial Cut (Ap)	.190"	.010"
Cycle Time	96 minutes	230 minutes
Material Removal Rates	.14	.01



THE RESULTS:

The new process, which utilized the Series 51 T-Carb, increased the material removal rate by over 90%. This allowed the tool to achieve a reduced cycle time of 134 minutes, which is a reduction of over 58%, opening 4,540 hours of production capacity.

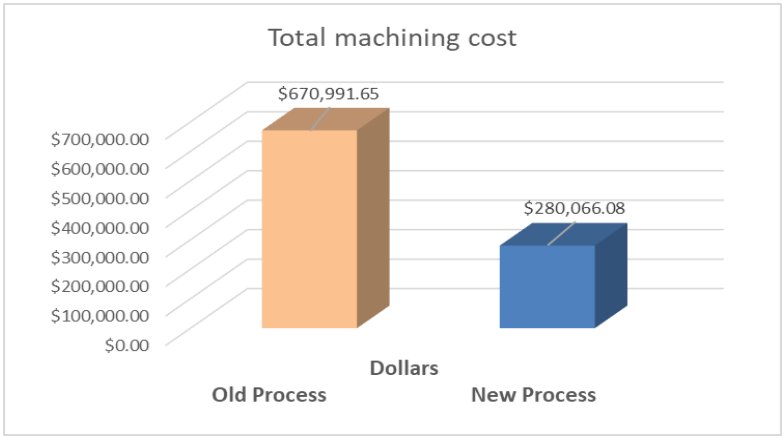
Cycle Time Saved per Part:	134 minutes
Number of Parts per Year:	2,033
Cycle Time Saved Annually:	4540
Cost to Machine per Hour:	$86.10
Machine Cost Saved Annually:	$390,894
Tool Life Improvement	Exactly the same
Total Cost Saved per Part:	$95.64
Total machining Cost Saved Annually:	**$415,282**

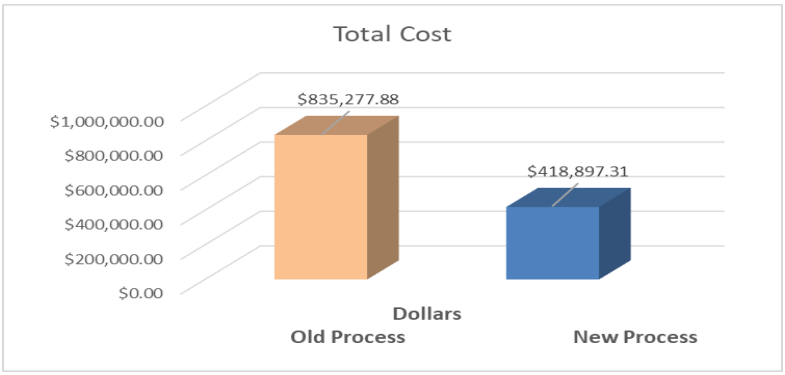


The same number of end mills were used to complete the operation at the increased material removal rates. The lower cost of the smaller tool compared to the tooling cost in the previous process allowed the end user to achieve an additional savings of $24,388. annually. This coupled with the annual machining cost savings allowed for a total savings of $415,282.

THE CONCLUSION:

MSC Industrial Supply and KSPT combined their efforts to achieve the challenging goal for the end user. Not to mention, saving them from potentially incurring additional cost of a new Haas VF2 machine.





Improved Material Removal Rates by 92%

52% Reduction in Cycle Time

$390,894 Annual Machining Cost Savings

$415,282 Total Annual Cost Savings

No Additional Machines Needed