CUTTING EDGE CASE STUDIES

MILLING
AUTOMOTIVE
6061 ALUMINUM

A BRAND AE-TL-N

SNAPSHOT

BACKGROUND
An OSG customer was machining Aluminum alloy wheels and looking to reduce their manufacturing cost and increase tool performance.

GOALS
The customer's main goal was to reduce cost by increasing productivity..

DETAILS

INDUSTRY
Automotive

PART
Alloy Wheel

MATERIAL
6061 Aluminum

MACHINE
Horizontal Machining Center

SPINDLE
CT40

ORIGINAL TOOLING
Conventional Aluminum End Mill
0.5" | 3 Flute | TiAlN

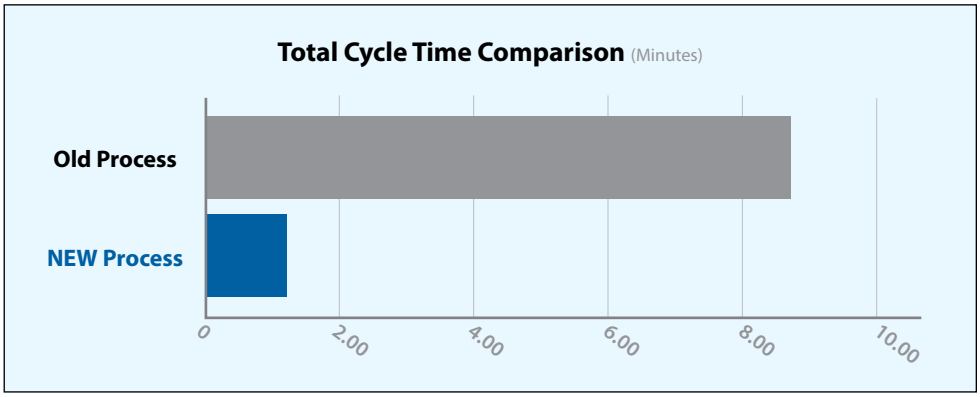
NEW TOOLING
A Brand AE-TL-N
0.5" | 3 Flute | DLC

NEARLY $42,000 ANNUAL SAVINGS!

THE STRATEGY

After the initial meeting with the customer, OSG suggested testing the AE-TL-N. OSG had previously seen success in similar applications where other customers were looking to increase Material Removal Rates (MRR) while maintaining or increasing tool life and productivity. One big feature of the AE-TL-N that stood apart from the competitor tool was the DLC coating. This coating is much more wear resistant than the current TiAlN coating and allowed for more aggressive parameters without affecting tool life.

	Original Process	NEW Process
Tool Diameter (Inch)	0.5"	**0.5"**
Cutting Speed (RPM • SFM)	4,003 • 524	**7,600 • 996**
Feed (IPM • IPT)	30.0225 • 0.0025	**201 • 0.0088**
Depth of Cut (Aa • Ar)	1" • 0.5"	**1" • 0.5"**
Metal Removal Rate	1.50 in^3 min	**10.03 in^3 min**
Cycle Time (Minutes)	8.33	**1.25**
Tool Life (# of Parts)	4	**8**



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THE RESULTS

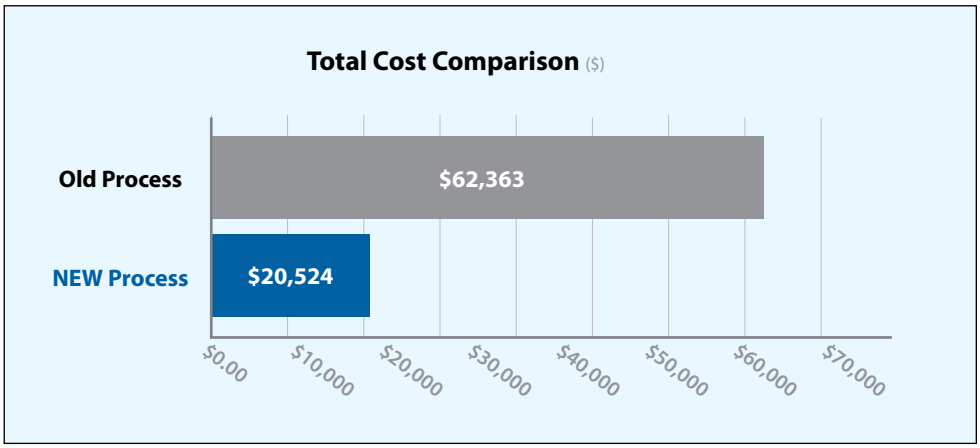
The following results were observed from testing the AE-TL-N end mill. OSG's AE-TL-N was able to machine double the amount of parts as the competitor tool at a much higher feed rate. This led to a cycle time reduction of 7 minutes per part.

- SFM was increased ***from 524 SFM to 997 SFM***
- Tool Cost was ***reduced by 46%***
- Number of parts was increased ***from 4 to 8***

Results Overview	
Cycle Time Saved Per Part (Minutes)	**7.08**
Number of Parts Per Year	**1,400**
Annual Cycle Time Saved (Minutes)	**9,914**
Annual Machine Cost Savings	**$16,523**
Tool Life Improvement (Parts)	**100%**
Annual Tool Change Cost Savings	**$2,916.67**
Total Machining Cost Saved Annually	**$41,839**

THE CONCLUSION

The customer was able to achieve their goal of reducing overall manufacturing costs. The lower tool cost of the AE-TL-N, paired with the higher running parameters greatly reduced the annual tool cost. Tool life of the AE-TL-N was also double that of the competitor tool. All these factors led to ***a cost savings of nearly $42,000 per year.***



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