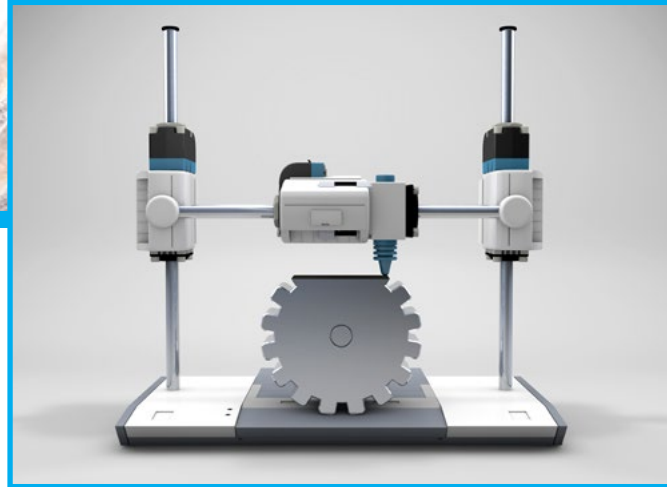




## HY-PRO® CARB VGM5



### SNAPSHOT

#### BACKGROUND

An end user was struggling machining printed Inconel. Their current tool was expensive and not providing sufficient tool life.

#### GOALS

The customer's main goal was to reduce cost by increasing tool life. Additionally, they needed to get two fully machined parts per tool.

#### DETAILS

##### INDUSTRY

Job Shop

##### PART

Volume Reader

##### MATERIAL

Printed Inconel

##### MACHINE

YCM

##### SPINDLE

CT40

##### ORIGINAL TOOLING

Competitor End Mill (12mm)  
0.472" | 5 Flute | TiAlN

##### NEW TOOLING

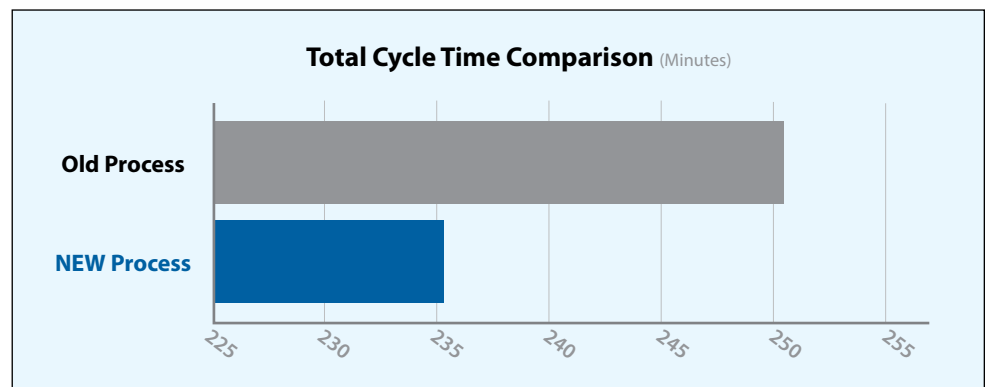
HY-PRO® CARB VGM5 End Mill  
0.625" | 5 Flute | EXO

## OVER \$5,000 IN SAVINGS!

#### THE STRATEGY

OSG suggested moving to a larger tool and keeping the same chip load. The competitive cost of the VGM5 allowed the customer to move to a larger tool and decrease the percent of radial engagement to a more desirable amount. This improved the cutter's ability to clear chips and reduce the amount of heat buildup in the cutter. The larger cutter diameter also helped with reducing tool deflection.

	Original Process	NEW Process
Tool Diameter (Inch)	0.472"	0.625"
Cutting Speed (RPM • SFM)	850 • 105	795 • 130
Feed (IPM • IPT)	4.25 • 0.001	4 • 0.001
Depth of Cut (Aa/Ar)	0.3" • 0.05"	0.3 • 0.05
Metal Removal Rate	0.06 in <sup>3</sup> min	0.06 in <sup>3</sup> min
Cycle Time (Minutes)	235.29	251.57
Tool Life (# of Parts)	1	2





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## THE RESULTS

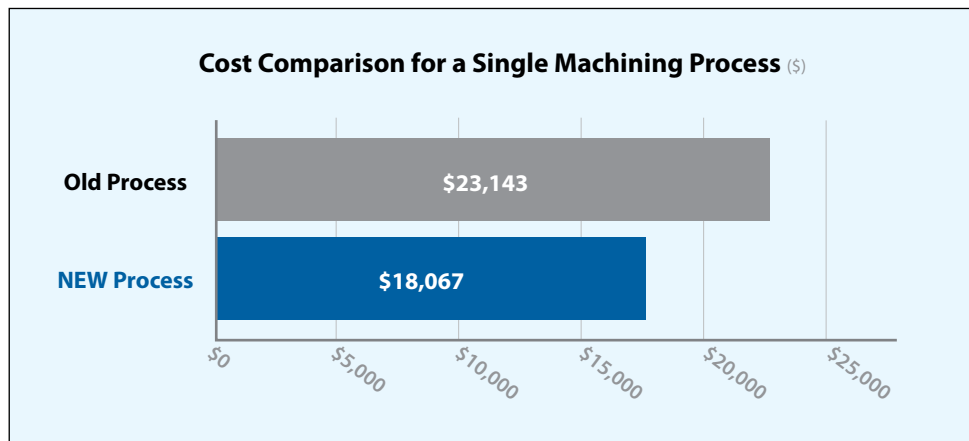
The following results were observed from testing the VGM end mill. OSG's VGM5 was able to machine double the amount of parts as the competitor tool. Additionally, the lower cost of the VGM reduced overall tool cost by 46%.

- Able to machine **double the amount of parts**.
- Tool cost **reduced by 46%**.
- **Annual savings of over \$5,000!**

Results Overview	
<b>Cycle Time Saved Per Part</b> (Minutes)	<b>16.28</b>
<b>Number of Parts Per Year</b>	<b>25</b>
<b>Annual Cycle Time Saved</b> (Minutes)	<b>407</b>
<b>Annual Machine Cost Savings</b>	<b>\$1,017</b>
<b>Tool Life Productivity Improvement</b> (%)	<b>100%</b>
<b>Annual Tool Change Cost Savings</b>	<b>\$156.25</b>
<b>Total Machining Cost Saved Annually</b>	<b>\$5,076</b>

## THE CONCLUSION

The following results were observed from testing the VGM end mill. OSG's VGM5 was able to machine double the amount of parts as the competitor tool. Additionally, the lower cost of the VGM reduced overall tool cost by 46%.



**OVER \$5,000 IN SAVINGS!**



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