



HY-PRO® CARB VGM5



SNAPSHOT

BACKGROUND

An oil & gas manufacturer utilizing an HEM toolpath using a 5 flute end mill was looking to improve cycle time and tool life of their operation.

GOALS

To provide a high performance end mill that would deliver a reduction in cost and cycle time while increasing tool life.

DETAILS

INDUSTRY

Oil & Gas

PART

Oscillator

MATERIAL

Low Carbon Steel (1018)

MACHINE

HM1000

SPINDLE

CT50

ORIGINAL TOOLING

5 Flute End Mill  
0.625" | 5 Flutes | TiAlN

NEW TOOLING

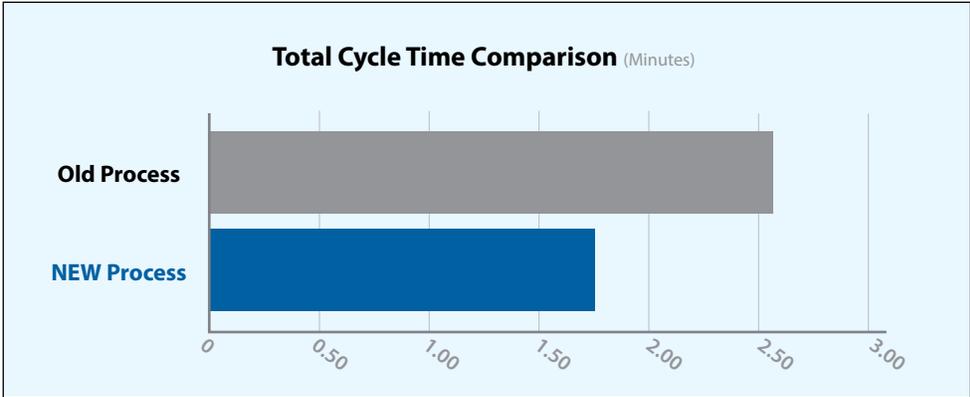
HY-PRO® CARB VGM5  
0.625" | 5 Flute | EXO

OVER \$800 ANNUAL SAVINGS!

THE STRATEGY

Based on past success in high efficiency milling of low carbon steels, OSG decided to recommend the VGM5. The VGM tool is an end mill series specifically designed for HEM processing that is competitively priced. With OSG's expertise of end mill design coupled with our multi-layer EXO coating to provide wear and heat resistance over the conventional TiAlN coating, the VGM5 tool had a significant advantage over the incumbent end mill.

	Original Process	NEW Process
Tool Diameter (Inch)	0.625"	0.625"
Cutting Speed (RPM • SFM)	1,711 • 280	2,750 • 450
Feed (IPM • IPT)	47.0525 • 0.0055 IPT	69 • 0.005 IPT
Depth of Cut (Aa • Ar)	1.5" • 0.1"	1.5" • 0.125"
Metal Removal Rate	7.06 in <sup>3</sup> min	12.89 in <sup>3</sup> min
Cycle Time (Minutes)	2.55	1.75
Tool Life (# of Parts)	9	12





## THE RESULTS

The following results were observed from testing the HY-PRO® CARB VGM5. OSG was able to provide the customer with a more cost efficient tool and an increase in both productivity and tool life.

- SFM was increased from **280 SFM to 450 SFM**.
- Cycle time was reduced from **2.55 min to roughly 1.8 min per part**.
- Number of parts per tool was increased **from 9 to 12**.

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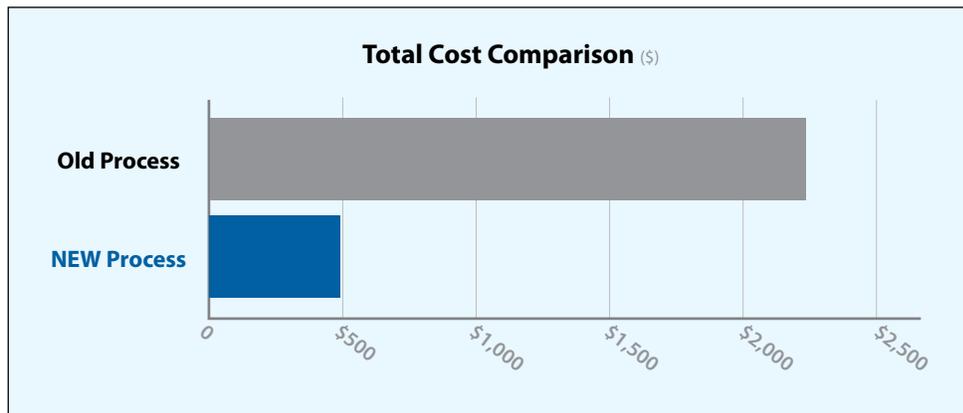
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### Results Overview

<b>Cycle Time Saved per Part</b> (Minutes)	<b>0.80</b>
<b>Annual Part Production</b>	<b>100</b>
<b>Annual Cycle Time Saved</b> (Minutes)	<b>80</b>
<b>Annual Machine Cost Savings</b>	<b>\$107</b>
<b>Tool Life Productivity Improvement</b>	<b>33%</b>
<b>Annual Tool Change Cost Savings</b>	<b>\$11.11</b>
<b>Total Machining Cost Saved Annually</b>	<b>\$849</b>

## THE CONCLUSION

The customer was able to save 1.5 hours of machine time per year. They were also able to improve tool life by 3 parts/tool. Most importantly the customer achieved their desired goals while saving roughly \$870.00.



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