



Real-Life Stories

## **Case Study: Operate Beyond the Limit with the OSG HY-PRO<sup>®</sup> CARB VGM End Mill**

Brought To You by OSG Tools | Jun 01, 2023

### **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.

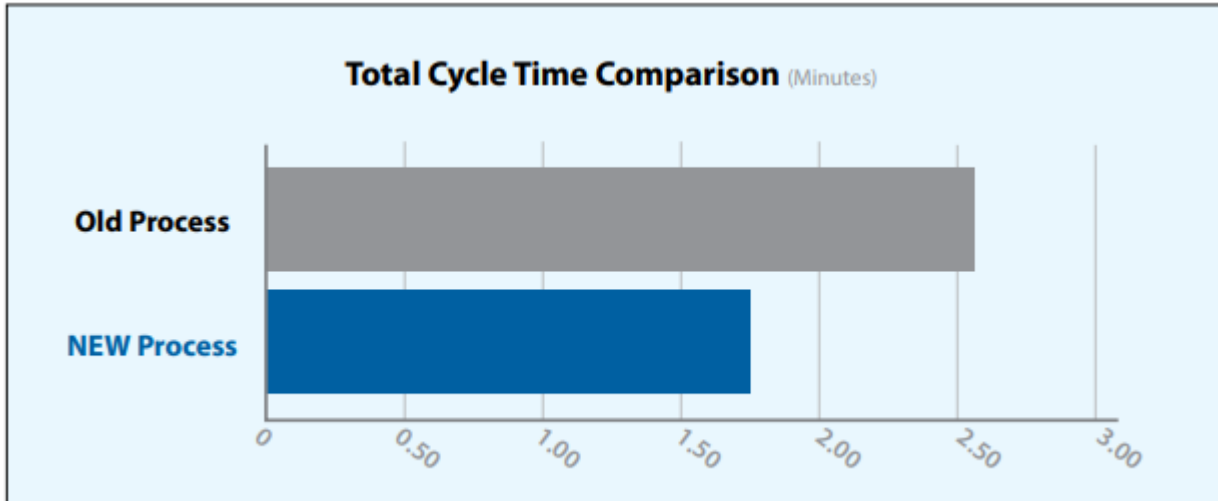
### **GOALS**

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

### **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 their 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

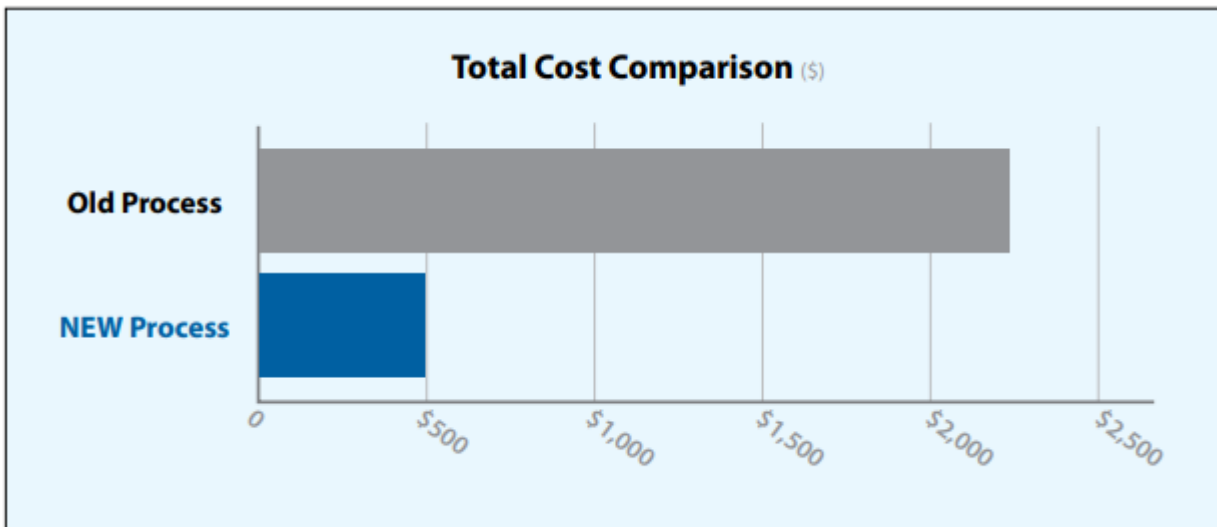
The following results were observed from testing the HY-PRO® CARB VGM5. OSG was able to provide the customer with a more cost-efficient tool and an increase in both productivity and tool life.

- 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**.

Results Overview	
Cycle Time Saved per Part (Minutes)	0.80
Annual Part Production	100
Annual Cycle Time Saved (Minutes)	80
Annual Machine Cost Savings	\$107
Tool Life Productivity Improvement	33%
Annual Tool Change Cost Savings	\$11.11
<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.



*Previously Featured on OSG's website.*

*Download a PDF of the Case Study [here](#).*

*To learn more about OSG's HY-PRO® CARB VGM end mills, visit [MSCDirect.com](http://MSCDirect.com).*

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