



**PENNMET  
2000**®

**SUPERIOR  
STAINLESS**

## **CASE STUDIES**



**PENN STAINLESS PRODUCTS, INC.**

# Sample Test A Report: Adapter, Rough OD

## Common 316/316L vs PennMet 316/316L

Penn Stainless Test Report – Date: 7/18/2014			
Turning	Rough Outside Diameter	Issued by: DNL	
Machine: Mazak Dual Turn 20	Machine #: 12	Test # 1	
Component: Housing	Material: PennMet 316/316L	Material: Common 316/316L	
Operation: Rough Turn OD	Hardness, hB: 180 - 240	Hardness, hB : 180 - 240	% of Increase
Cutting speed	600	500	83%
RPM	1150	950	83%
Feed/rev.	0.013	0.01	77%
Depth of cut	0.07	0.035	50%
Length of cut	7	14	200%
Criterion tool change	Flank	Flank	
Machine cost/hour	\$100.00	\$100.00	
Cutting time/component (mins)	0.47	1.47	315%
Non cutting time/component (mins)	2	2	
No. of components/set of edges	25	12	
Tool changing time (mins)	2	2	
Total time/component (mins)	2.55	3.64	30%
Machine cost/component	\$4.11	\$5.79	29%
Total machining cost/component	\$4.11	\$26.55	29%
Productivity Increase %	30%		
Savings/component	\$1.68		



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Turning	Rough Outside Diameter	Issued by: DNL	
Machine: Mazak Dual Turn 20	Machine #: 12	Test #1	
Component: Housing	Material: PennMet 316/316L		
Operation: Rough Turn OD	Hardness, hB: 180 - 240		<b><u>% improvement</u></b>
Cutting speed	600	<b>Cutting Speed:</b>	<b>83%</b>
RPM	1150	<b>RPM:</b>	<b>83%</b>
Feed/rev.	0.013	<b>Feed/rev:</b>	<b>77%</b>
Depth of cut	0.07		
Length of cut	7		
Criterion tool change	Flank		
Machine cost/hour	\$100.00	<b>Cutting time/component:</b>	<b>315%</b>
Cutting time/component (mins)	0.47	<b>Total machining cost/component:</b>	<b>30%</b>
Non cutting time/component (mins)	2		
No. of components/set of edges	25		
Tool changing time (mins)	2		
Total time/component (mins)	2.55	<b>Productivity increase:</b>	<b>30%</b>
Machine cost/component	\$4.11	<b>Savings/component:</b>	<b>\$1.68</b>
Total machining cost/component	\$4.11		
Productivity Increase %	30%		
Savings/component	\$1.68		



# Sample Test B Report: Rough TURN OD

## Common 316/316L vs PennMet 316/316L

### Penn Stainless Test Report – Date: 7/18/2014

Turning	Outside Diameter	Issued by: DNL	
Machine: Okuma LB 25	Machine #: 2	Test # 1	
Component: Housing	Material: PennMet 316/316L	Material: Common 316/316L	
Operation: Rough Turn OD	Hardness, hB: 180 - 240	Hardness, hB : 180 - 240	% of Increase
Cutting speed	450	300	67%
RPM	215	145	67%
Feed/rev.	0.011	0.008	73%
Depth of cut	0.15	0.1	67%
Length of cut	10	15	150%
Criterion tool change	Flank	Flank	
Machine cost/hour	\$100.00	\$100.00	
Cutting time/component (mins)	4.23	12.93	306%
Non cutting time/component (mins)	3	3	
No. of components/set of edges	4	2	
Tool changing time (mins)	2	2	
Total time/component (mins)	7.73	16.93	54%
Machine cost/component	\$12.05	\$26.55	55%
Total machining cost/component	\$12.05	\$26.55	55%
Productivity Increase %	54%		
Savings/component	\$14.50		



# Sample Test Report: Housing, Rough Turn OD

## Common 316/316L vs PennMet 316/316L

### Penn Stainless Test Report – Date: 7/18/2014

Penn Stainless Test Report – Date: 7/18/2014			
Turning	Outside Diameter	Issued by: DNL	
Machine: Okuma LB 25	Machine #: 2	Test #1	
Component: Housing	Material: PennMet 316/316L		<b><u>% improvement</u></b>
Operation: Rough Turn OD	Hardness, hB: 180 - 240		
Cutting speed	450	<b>Cutting Speed:</b>	<b>67%</b>
RPM	215	<b>RPM:</b>	<b>67%</b>
Feed/rev.	0.011	<b>Feed/rev:</b>	<b>74%</b>
Depth of cut	0.15		
Length of cut	10		
Criterion tool change	Flank		
Machine cost/hour	\$100.00	<b>Cutting time/component:</b>	<b>306%</b>
Cutting time/component (mins)	4.23	<b>Total machining cost/component:</b>	<b>55%</b>
Non cutting time/component (mins)	3		
No. of components/set of edges	4		
Tool changing time (mins)	2		
Total time/component (mins)	7.73	<b>Productivity increase:</b>	<b>54%</b>
Machine cost/component	\$12.05	<b>Savings/component:</b>	<b>\$14.50</b>
Total machining cost/component	\$12.05		
Productivity Increase %	54%		
Savings/component	\$14.50		





# Sample Test Reports

- **Problem** – Higher tool wear and long production time
- **Solution** – PM 2000 enabled the machines to increase feeds and speeds by 70% to 80% and reduce part wear. The customer saved \$1.68 to \$14.50 per component and increased overall productivity by 30% to 54%.





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