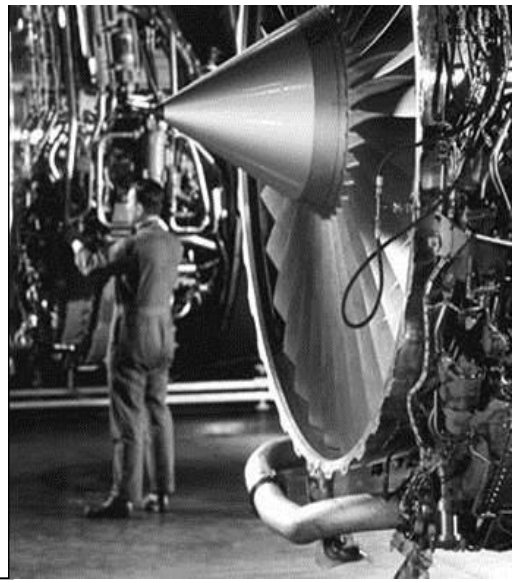
AEROSPACE (USA)
COMPONENT MANUFACTURING
Castrol Hysol® MB 50
ANNUAL SAVINGS: $20,500 + 10X Tool Life



THE SITUATION

A precision aerospace components manufacturer was performing several operations (primarily milling and drilling) on landing gear and other components, consisting of a wide variety of metals including titanium, 7075 aluminum and 321 steel. The tooling consisted of HSS to solid carbide running at aggressive speeds and feeds. They have been running the same semi-synthetic coolant for 8+ years.

The key area of improvement needed was foam control. They had issues with the more aggressive drilling operations that required pressures of 1500 psi or greater. Additionally, the end customer was pressuring them to provide more, higher quality parts at a lower cost.

BEFORE

- Concentration - 6-7%
- Surface Finish – Good
- Foam – regular problem at high pressures
- End Mill Life (main critical operation) – 1 part / end mill

AFTER

- Concentration - 6-7%
- Surface Finish – Improved
- Foam – none, even in excess of 1,000 psi
- End Mill Life (main critical operation) – 10 parts / end mill

THE SOLUTION

- Castrol Hysol MB 50 was chosen for trial due to its excellent lubricity, known performance in multi-metal applications and its exceptional foam control.
- On 321 steel in the most aggressive milling operation performed by the customer, the tool life has been increased by 10 times!!!
- With the previous coolant, the customer could machine 1 part per $125 end mill (HSS). With Hysol MB 50, they are able to machine 10 parts per the same end mill!
- All this and no foam or operator issues.

The trial of Hysol MB 50 proved itself beyond the customer expectations. The critical end mill operation has yielded a tool life increase of 10X!

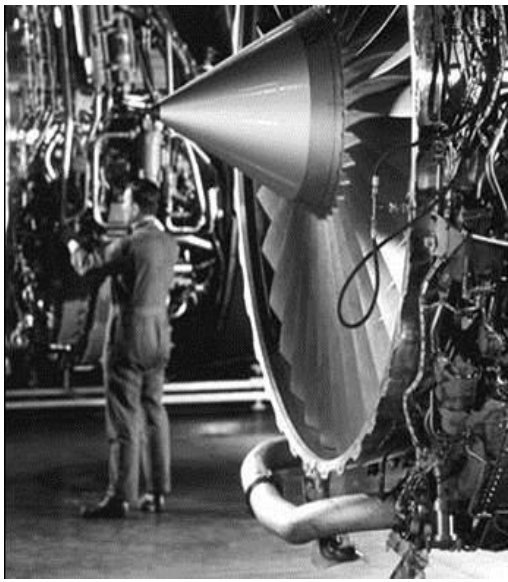
RECOMMENDATIONS

The customer was expecting to get equivalent machining performance with improved foam control but got improved surface finish and much longer end mill life.

Additionally, the wear on the end mill was very minor and only to the end. This has yielded an additional savings in regrind costs as well as fewer new tools needed (capable of getting 3X more regrinds per tool with Hysol MB 50).

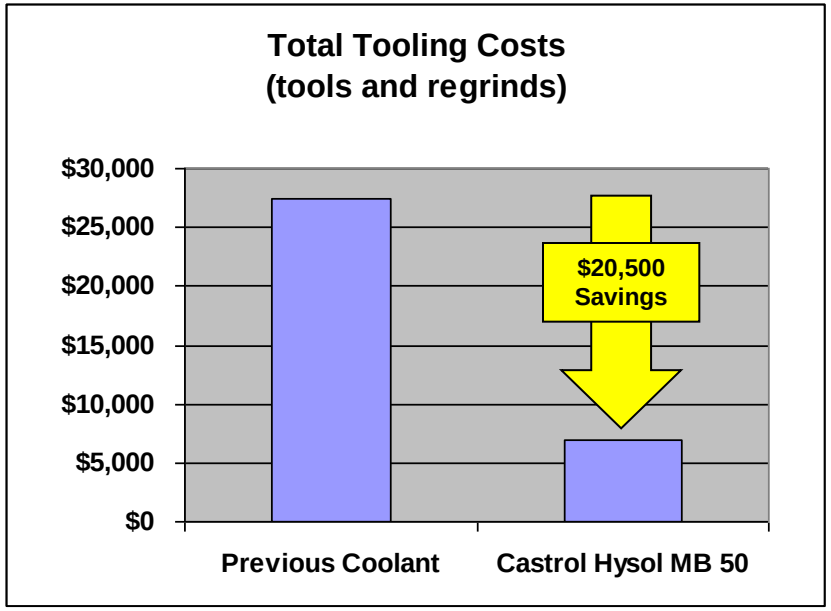
CONCLUSION

The customer is extremely happy with the performance, both machining and maintenance. Due to the success on the end mills, Hysol MB 50 has been expanded to encompass more operations including milling and drilling of titanium.



Coolant Cost Analysis

Coolant used	Previous Coolant	Castrol Hysol MB 50
Cost per end mill	$125	$125
Parts per end mill	1	10
Cost per part	$125	$12.50
Regrinds per tool	10	30
Total costs	$27,500	$7,000
Total Savings		**$20,500**



OTHER POTENTIAL APPLICATIONS

Castrol Hysol MB 50 has proven to perform incredibly well on various aluminium alloys (6061, 7075 and many cast varieties) as well as inconel, titanium and steel alloys. It is suited for any of these metals at low to high pressure and for use in milling, drilling, tapping and reaming.