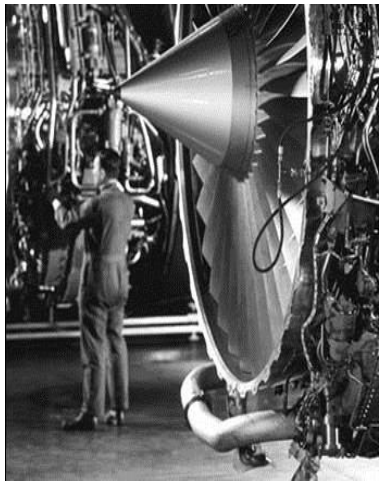
METALS MANUFACTURING (USA)
AEROSPACE
Castrol Syntilo® 9954
ANNUAL SAVINGS: $6,057 + 30% Cycle Time Reduction



THE SITUATION

A small number of difficult to machine parts (that were traditionally machined with neat oil) needed to be broached with water-based coolant. The needed part was Stainless 418 / Greek Ascoloy®, which this plant had always broached using a chlorinated neat oil,

The plant could not risk lost production time & incur waste disposal costs to change over to the neat oil in a machine which already contained a water-based coolant. It was decided to transfer the experience from a sister facility and run the job with a full synthetic, water-based coolant: Syntilo 9954.

BEFORE CHANGE

- Neat oil - chlorinated
- RAM speed – 13 ft/min
- Stroke time – 46 seconds
- Cutter angle – 15 degrees

AFTER CHANGE

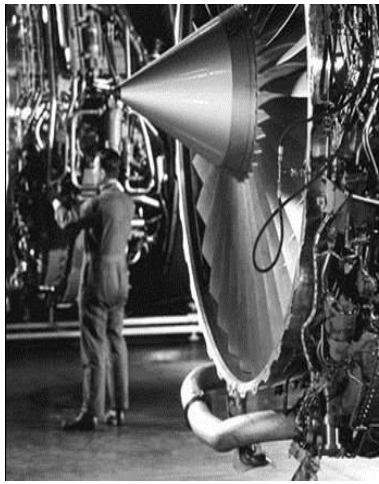
- Synthetic coolant – Syntilo 9954 @ 9%
- RAM speed – 43 ft/min
- Stroke time – 14 seconds
- Cutter angle – 22 degrees
- Cycle time – decrease of 1 min/part

THE SOLUTION

- Castrol has many successful experiences changing horizontal and vertical broaches from neat oil to water-based cutting fluids
- The decision was made to use the same parameters that a sister facility used to successfully broach Stainless 418/Greek Ascoloy® with Syntilo 9954.
- The urgency of the demand for the part & our success at the sister facility gave us the opportunity to conduct the test.
- A test piece was run using the normal oil speeds showing poor finish.
- Parts with good finish were made when the ram speed was increased and the cutter angle was changed to 22 degrees.
- Cycle time was reduced 30% and the coolant dump cost was avoided!

The customer needed to use the current product to broach a small run of difficult to machine parts

Castrol utilized “Best Practice Transfer” between customer sites resulting in a knowledge transfer to improve cycle time and eliminate the need for a costly dump.



RECOMMENDATIONS

Castrol's experience with broaching operations gave us the confidence that Syntilo 9954 could successfully perform the job with the difficult to broach material. The key was to have the freedom to employ the process changes (speed and tool modifications) to make the job a success in the test machine.

When we have the opportunity to share our product and process experience, we are very successful in satisfying our customers.

OFFER DETAILS

Our customer was in a bind, both from a time urgency perspective as well as incurring unwanted costs if the usual solution was employed. Our solution to employ a "best practice" transfer to use the existing coolant in the machine (Syntilo 9954) and use the successful process parameters from the sister facility allowed them to make a quick tooling change and proceed with a successful part run.

CONCLUSION

The customer is very happy that Castrol was able to deliver a cost effective and environmentally friendly solution to a temporary situation. This knowledge exchange further solidified that Castrol is a world class company with the best interest of the customer in mind.

SAVINGS ANALYSIS

Number of parts	700
Stroke	120 in.
Time per stroke before	46 sec.
Time per stroke after	14 sec.

Dump, clean & recharge (convert from water to oil)	$ 432.24
Disposal (water based coolant)	$ 201.06
Gun Drill Oil 2190	$3,327.50
Oil disposal (after parts run)	$ 100.53
Dump, clean & recharge (oil back to water)	$ 432.24
Syntilo 9954	$1,248.60
	$5,742.18
Cycle time savings - 1 min/part	$ 315.18
TOTAL SAVINGS	**$6,057.35**

OTHER POTENTIAL APPLICATIONS

Syntilo 9954 has proven to be an extremely effective water-based coolant, capable of replacing straight oils in the difficult and demanding operation of broaching. Castrol has successfully improved cycle times, increased tool life and improved operator working conditions at many facilities. These conversions have resulted in significant dollar savings for the customers.