

Challenges

A major powertrain manufacturer was using an old soluble oil technology in their 24,000 gallon central system that fed 380 aluminum machining operations. The soluble oil coolant usage for the facility was 247,926 gallons equating to \$2,097,454 for soluble oils alone. In April 2008, Quaker Chemical was awarded the Chemical Management contract at this site and wanted to show the manufacturer that switching from old soluble oil to premium fluid would eliminate the following problems:

1. Poor microbiological and fungal resistance resulting in:
 - Increased sump side additive costs (pH adjusters, biocides, fungicides, etc.)
 - Foul odors associated with live and dead bacteria and fungi
 - Increased manpower to make pesticide additions
 - Increased risk of downtime due to the blinding of filtration devices
2. Poor mycobacteria resistance
3. Poor emulsion stability resulting in:
 - Increased dump schedule
 - Increased downtime due to unscheduled dumps
 - Increased manpower to re-charge central systems
 - Increased system cleanout costs
 - Increased additive costs
4. Lower tolerance for tramp oil contamination, excessive centrifuging due to high tramp oil levels can result in a deterioration of the emulsion stability.
5. Poor corrosion protection resulting in:
 - Increased scrap
 - Increased additive costs
6. Increased manpower to cycle machines over down periods
7. Increased waste treatment costs due to higher discharge levels
8. Poor tool life

Product Description

QUAKERAL[®] 381 SD is a high-performance emulsifiable metalworking fluid designed for heavy-duty machining and grinding operations requiring a high degree of lubricity, cleanliness, cooling, and corrosion protection. It is recommended for critical surface finish machining of cast and wrought aluminum alloys, as well as more difficult machining, grinding, and honing operations on cast iron and steel alloys. This product is designed to control microbiological growth including Mycobacteria. QUAKERAL[®] 381 SD does not contain any chlorinated paraffin or any formaldehyde-donating compounds.

Providing Solutions

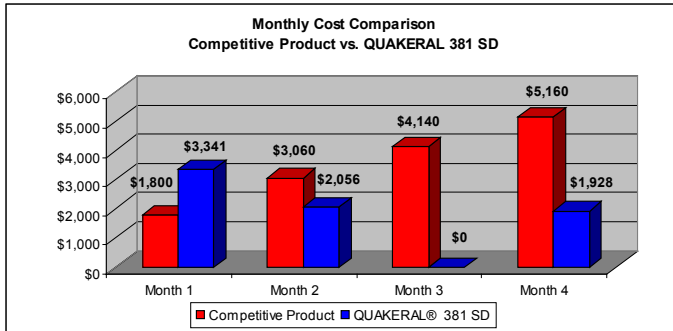
Quaker put together a proposal showing that although premium fluids cost more per gallon, the manufacturer would still achieve a chemical costs savings, as well as cost savings in the following areas:

- Additives
- Manpower
- Tooling
- Waste treatment
- System cleanout
- Scrap

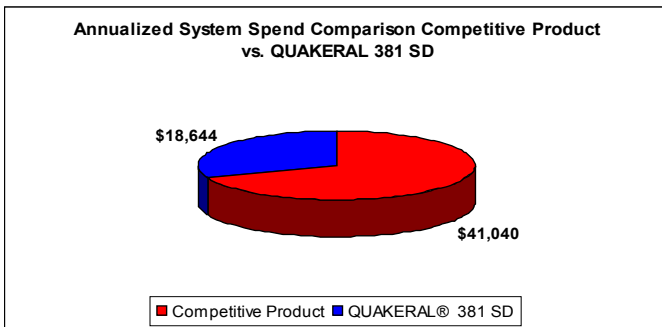
The manufacturer would also benefit from decreased downtime and improved productivity, along with a decrease in the health and safety concerns related to running soluble oil fluids.

With this proposal Quaker gained approval to begin converting the systems to QUAKERAL[®] 381 SD.

The graph shown below compares the total system cost per month using the competitive product and the total system cost per month using QUAKERAL® 381 SD.



The total system cost for 2008, prior to the conversion, averaged \$3,420 per month with the competitive product. After the conversion to QUAKERAL® 381 SD, the total system cost averaged \$1,554 per month. Based on the annualized system spend, the conversion resulted in an annual cost savings of \$22,396.



Product and Process Expertise

Metalworking lubricants represent a very minor part of the costs in a metalworking process, typically less than 1%. This case illustrates the importance of correct fluid selection. The impact of the fluid can be a multiple of its costs, making the price of a metalworking fluid insignificant. That is why Quaker focuses on developing fluids with the highest performance without compromise, fluids that sharpen your competitive edge.

Process & Equipment Info

Part:	Aluminum cases for transaxles
System Sizes:	24,000 gallon central system
Part Alloy:	380 Aluminum
Water Hardness:	~400 ppm as CaCO ₃
Concentration:	5-8%
Application Pressure:	50 psi
Filtration System:	2 Henry Filter wedgewire drums with chip drag
Specific Operation:	Aluminum Machining and Grinding