

Challenges

QUAKERAL® 381 replaced a two-phase competitive product at a major automotive manufacturer. This customer manufactures 319 aluminum engine heads and has a 143,000 gallon central system.

The original issues presented to Quaker were:

- Built up edge on drills resulting in excess scrap.
- Excessive tramp oil contamination that impacted the coolant's performance at levels exceeding 1%.
- Poor microbiological control leading to partial dumps on the system three times per year.
- A chemical spend in excess of \$500,000 annually on the central system alone.

The two-phase product used was at 8.0-8.5% for the oil phase and 1-2% for the water phase. QUAKERAL® 381 was maintained at 8-10%. Quaker ran CNC machinability evaluations with and without tramp oil to see the impact on the machining and overall performance.

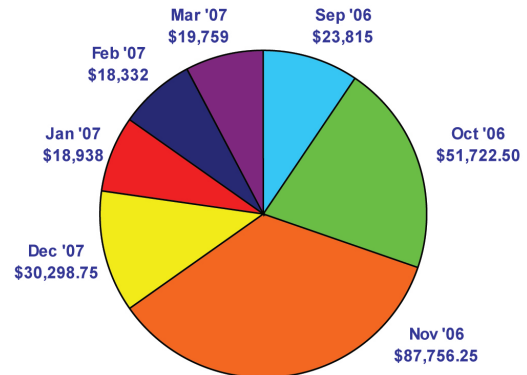
The two-phase product machined the 319 aluminum effectively without the presence of any tramp oil. The presence of the tramp oil at 1% and 2%, however, produced a noticeable loss in performance. This was seen in higher machining torque and machining vibration as well as poorer machined hole finish. In addition there was a noticeable built up edge (BUE) on the cutting tool edges.

QUAKERAL® 381 machined the 319 aluminum effectively without the presence of any tramp oil. In the presence of both 1% and 2% tramp oil, the performance was not degraded. In fact, there was a slight improvement in performance. This consistency was critical in replacing the two-phase product from a competitor. The central system was dumped, cleaned and recharged with QUAKERAL® 381 at 8.0%.

Providing Solutions

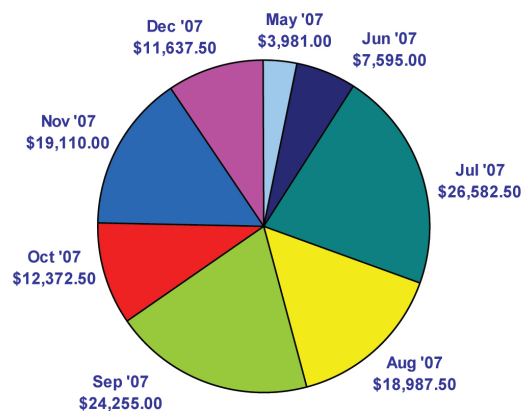
Total System Costs With Two-Phase Product:

- Eight month expense was \$308,728
- Average monthly spend of \$41,690
- Does not include partial dumps

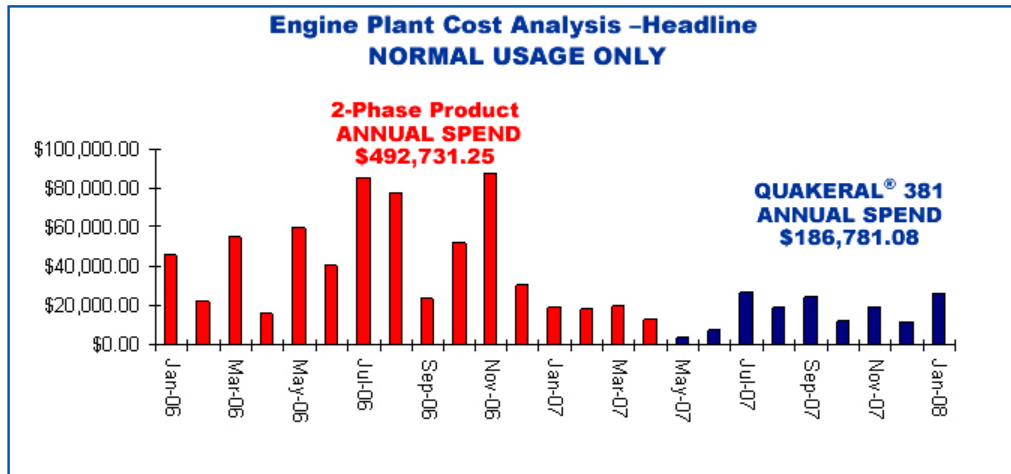


Total System Costs With QUAKERAL® 381:

- Eight month expense was \$124,519
- Average monthly spend of \$15,565
- No partial dumps required



- This is a 60% savings equating to an annual savings of \$405,000!
- The first \$305,000 savings was related to a decrease in the cost/gallon and decreased system usage.
- The other \$100,000 savings resulted from the elimination of partial dumps.
- In January 2008 the department increased hits/tool by 25% for more savings.



Product Description

This high-performance, emulsifiable metalworking fluid is 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. This product does not contain any chlorinated paraffins or any formaldehyde-donating compounds.

Product & 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

Headline	
Part:	Engine Head
Part Alloy:	319 Aluminum
System Size:	8 Henry Filter Standard Indexing Drums
Pressure:	60 - 85 psig
Filtration System:	4 vacuum polishing filters with 2.5-ounce polypropylene filter media