Machining and Cleaning

QUAKERCOOL® W ALCA FF and OIL HR CASE STUDY

AUTOMOTIVE INDUSTRY

Challenges

A major global automotive engine manufacturer was looking to improve machine performance, reduce overall cost and reduce waste of machining fluids used in the manufacturing of gear boxes and engine parts in a plant in Portugal. In addition, they wanted to reduce their overall number of global suppliers and consolidate an existing variety of chemical material packaging to bulk storage.

To address these needs, Quaker recommended the facility change to 2PAQ technology – in this case, a combination of QUAKERCOOL® W ALCA FF and QUAKERCOOL® OIL HR. Quaker wanted to show that while the solution was more expensive per gallon than some competitive products, it would provide overall cost savings by reducing waste/waste treatment costs as well as reducing downtime due to foaming issues. In addition, by using 2PAQ technology the facility would reduce the overall number of machining and grinding fluids used in the facility.

Product Description

QUAKERCOOL® OIL HR is the water soluble "oil phase" of the 2PAQ technology. Developed to contain lubricants which will perform a wide range of machining and grinding operations on Cast Iron, Steel and Aluminum, the QUAKERCOOL® OIL HR phase is used in combination with QUAKERCOOL® W ALCA FF water soluble "alkaline phase." Concentrations of the different phases depend on the difficulty of operation, material types and severity of the working area. Concentrations can be adjusted accordingly to allow for replacement of synthetic, semi-synthetic, or micro emulsions. Thus the product needs for a wide variety of operations at one location can be addressed by using different ratios of the 2PAQ alkaline and oil phase components.

When added alone to water, the alkaline phase alone can be used for grinding of Cast Iron and Steel Alloys. The versatility of the alkaline phase also allows it to be used as a process cleaner. When the process cleaner fluid solution has reached its useful life, it can be added to the coolant tank to aid with volume control and waste reduction instead of being dumped.

As REACH regulations continue to be mandated across Europe, customers are seeking boric acid-free products. QUAKERCOOL® W ALCA BFF is a boron-free, water soluble "alkaline phase" that is used in the same manner as the QUAKERCOOL® W ALCA FF.

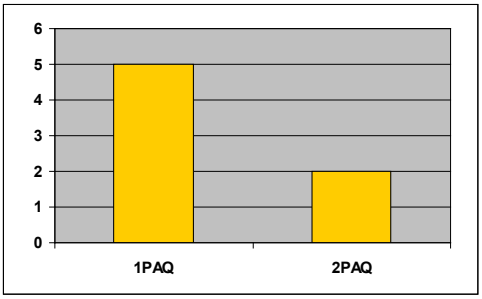
Providing Solutions

The manufacturer introduced the combination of QUAKERCOOL® W ALCA FF and QUAKERCOOL® OIL HR into the gear box case production, involving two aluminum central systems and three washers. The 2PAQ solution enhanced machine performance by improving foaming properties and tramp oil compatibility, as well as offered more robust concentrates.

During the first year of use, the change resulted in the following cost savings:

Area of Savings	Annual Cost Savings
Waste Treatment	€35,000
Biocide Additions	€3,000
Anti-Foam Additives	€2,000
Water	€1,800

Number of M&G products required.



The change also resulted in a 150% reduction in products used for machining and grinding. In addition, the amount of biocides required in the plant was reduced thereby increasing worker safety.
Quaker is currently working with the plant's coolant manager to install bulk storage in the plant. In addition, we are discussing opportunities for the customer to change to 2PAQ technology in other countries. This will enable them to buy products on a more global basis, therefore reducing their total number of suppliers.

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Process & Equipment

QUAKERCOOL® W ALCA FF	
Part:	Gear Box Case
System Size:	3 washers: 10 m^3, 7 m^3 & 7 m^3
Water Hardness:	0° dH
Concentration:	2%
Application Pressure:	2 to 4 bars (final wash)
Filtration System:	DURR ECOCLEAN
Specific Operation:	Cleaning

QUAKERCOOL® W ALCA FF and QUAKERCOOL® OIL HR	
Part:	Gear Box Case
System Size:	2 central systems: 80 & 140 m^3
Water Hardness:	7° dH
Concentration:	3% & 7%
Application Pressure:	4 bars (Up to 50 bars for specific machining operations)
Filtration System:	ECOFLUIDE
Specific Operation:	Machining

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.