Machining and Grinding: 50% Reduction of the Coolant Consumption Due to Better Coolant Lifetime

QUAKERCOOL® 7200 HBFF

The Challenge
A leading German die casting company experienced problems related to their metalworking coolant and service from the supplier. The die caster produces automotive modules, home appliances and consumer goods from aluminum, magnesium and zinc with decorative surfaces, and was looking to alleviate the following problems:

- Skin irritation
- Bacterial problems
- Low coolant lifetime
- Coolant containing Boron and Formaldehyde

The Solution
Quaker Houghton visited the most critical plant located in Czech Republic which was never visited by the competitor. As a result of the visit, Quaker Houghton introduced QUAKERCOOL® 7200 HBFF after performing compatibility tests with different polish pastes, cleaners, electroplating, etc. The product was recommended based on the following advantages:

- Formaldehyde releaser free
- Boron free
- Excellent bio-resistance
- Cleanliness of tools/machinery even on cast iron in hard water
- Excellent corrosion protection

Beginning in November 2012 thru June 2013, QUAKERCOOL® 7200 HBFF was gradually introduced into machines located in Germany and Czech Republic.

The Benefits
At the end of the trial, the customer realized the following results:

- 10% lowered total cost from the competitor
- 50% reduction of the coolant consumption due to better coolant lifetime in Czech Republic plant
- Improved biostability of the coolant over the competitor
- Elimination of skin irritation
- Elimination of bacteria related problems

Process and Equipment

<table>
<thead>
<tr>
<th>PRODUCT TITLE</th>
<th>PRODUCT INFORMATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Material</td>
<td>Diecast Aluminum, Magnesium and Zinc</td>
</tr>
<tr>
<td>Concentration</td>
<td>6 to 8 %</td>
</tr>
<tr>
<td>Water Hardness</td>
<td>10 °dH / 18 °F / TH 180 ppm</td>
</tr>
<tr>
<td>Machines</td>
<td>Milling/Drilling</td>
</tr>
<tr>
<td>Machines</td>
<td>&gt; than 20 Haas and Chiron machines</td>
</tr>
<tr>
<td>System Size</td>
<td>200-300 litres tank capacity</td>
</tr>
</tbody>
</table>

The Product
QUAKERCOOL® 7200 HBFF is a high performance micro-emulsion ideally suited to all operations where high surface finish quality and high lubrication is needed. It is ideal for general purpose machining of most engineering materials. QUAKERCOOL® 7200 HBFF is well suited for difficult metalworking operations on cast iron, steel and aluminum. The concentration range is recommended to be between 4 - 10% depending on type of operation.
1. Roughness measurements in straight flute reaming on aluminum alloy (AlSi7Mg)

Single step through hole on a CNC vertical milling center
Diameter: 10.2mm – Depth: 44mm – Cutting speed: 20m/mn – Spindle speed: 625 rpm – Feed: 0.25 mm/rot

2. Forces measurement in drilling operation on aluminum alloy (AlSi7Mg)

Single step through hole on a CNC vertical milling center
Diameter: 10.2mm – Depth: 44mm – Cutting speed: 20m/mn – Spindle speed: 625 rpm – Feed: 0.25 mm/rot

3. Cutting power measurement in drilling operation on aluminum alloy (AlSi7Mg)

Single step through hole on a CNC vertical milling center
Diameter: 9.8mm – Depth: 38mm – Cutting speed: 200m/mn – Spindle speed: 6500 rpm – Feed: 0.15 mm/rot – Internal cooling

Quaker Houghton
Forward Together