

Challenges

A major global automotive engine manufacturer with a UK plant was struggling to produce consistent quality engine components with HSS reamers. In order to increase consistency, productivity and reduce overall tooling costs, the manufacturer switched to more expensive carbide reamers. After the switch to carbide tooling, they suffered from:

- **Unsatisfactory surface finish**
- **Regular breakage of reamers and taps**
- **Poor tool life**

Quaker addressed this situation utilizing their extensive experience in the metal machining area by introducing QUAKERAL® 370, a heavy-duty, chlorine-free environmentally up-to-date product. The use of Quaker's in-house developed ester lubricant technology, as a replacement for the environmentally damaging EP additives, produced an immediate positive impact on the machining process.

Providing Solutions

The use of QUAKERAL® 370 resulted in SAVINGS EQUAL TO 3 TIMES ANNUAL COOLANT COSTS

- **Increase in tool life from 1,000 components per HSS reamer to 30,000 per carbide reamer. This represented an annual saving of approximately £45,000 per year.**
- **No tool breakage thus eliminating the necessity to rework the machined pieces by Spark-erosion. For the taps the breakage rate was reduced from 16 to 2 a month, saving another £2,700 per year.**
- **Undisturbed production and increased efficiency via consistent performance.**
- **Excellent surface finish - Ra improved from 1.5 µm minimum to 1.0 µm maximum.**
- **Improved working conditions of operators due to cleaner machines.**

Customer Reference

- Bosch
- Briggs & Stratton
- Caterpillar
- Cummins
- Chrysler
- Delphi
- Federal Mogul
- Ford
- GM
- INA Bearing
- Koyo
- Pratt & Whitney
- PSA
- Renault
- Toyota
- Volkswagen
- ZF Corp

OEM Reference

- Alfing
- Deckel
- Excello
- Gehring
- Giddings
- Grob
- Heller
- Honsberg
- Lamb
- Makino
- Mapal
- Mazak
- Mollart
- Nagel
- Toyota
- Varinelli

Product Description

QUAKERAL® 370 is based on advanced ester technology and suitable for machining titanium, aluminium, steel, alloy steels and cast iron. QUAKERAL® 370 can be used on all general metalworking applications as well as arduous operations such as:

- Broaching
- Gun drilling
- Mapal reaming
- Tapping
- Creep feed grinding
- Hobbing
- Turbine machining
- Neat oil replacement

Process & Equipment

Lamb Technicon	
Part:	Engine Block Cover
Part Alloy:	Aluminum LM25
Part Produced:	Cylinder Head
Tooling:	Carbide Reamer & Straight Flute Tap
Concentration:	10%
Pressure:	70 bars Reaming / 5 bars Tapping
Specific Operation:	Reaming and Tapping

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.