

Challenges

A manufacturer of cast aluminum wheels for the passenger car and light truck market, experienced problems in machining the castings. Key problems were:

- Poor tool life
- Excessive mist rising from machines
- No concentration control
- Frequent dumps of coolant
- Lack of service from current supplier

Providing Solutions

The use of QUAKERAL® 370 resulted in:

- Tool life doubled from 300 to 600 wheels/tool on average, creating an annual savings of over \$300,000.
- 40% reduction in mist above machines.
- Improved part finish of 116 micro-inches to 64 micro-inches.
- Part temperature reduced an average of 10°F.
- Reduced coolant usage due to lower operating concentration and less frequent dumps.

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

The inside (ID) and outside (OD) circumferences of the casting are rough machined with tool steel and carbide inserts in an Okuma machine tool. Next, the parts are transferred to an Emco drill to drill lug holes and valve stem holes with tool steel drills. The last operation is finishing the OD circumference and the face of the wheel with diamond tools in another Okuma.

Okuma 1st-Roughing, 2nd-Emco Drill and Okuma Finishing

Part:	Passenger Car and Light Truck Wheels
Part Alloy:	356 Cast Aluminum
Tooling:	High-speed steel, and Carbide Roughers with Diamond Finishing Tools
Specific Operation:	Turning and Drilling

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.