

## **BIOCHEM show case**

# **Reduce the complexity of operations whilst meeting all the complex technical requirements for metalworking fluids**

## **Problem**

**Ford Motor Company uses between 20-30 million litres of soluble metal cutting fluid globally every year, primarily in the manufacture of engines and transmissions.**

**Until 1999 over 99% of this fluid was based on mineral oil technology. There were over 25 suppliers of fluids to Ford Powertrain Operations, providing over 200 different products worldwide. There were few common products or management systems. This represented a major chemicals and waste management problem.**

## **Technical solution**

**The challenge was to dramatically reduce the complexity of the operations whilst meeting all the complex technical requirements for metalworking fluids including:**

- **Tool-life**
- **Surface finish/quality**
- **Environmental impact**
- **Cost**
- **Compatibility with work environment**
- **Bio-stability**
- **Foaming**

- **Operating concentrations/toxicology**

Working with an established Tier 1 supplier Houghton International, Ford selected a two-phase metalworking lubricant/coolant based on vegetable oil.

## **Benefits**

In use at the Dagenham Engine Plant Ford found the following benefits:

- **Lower operating concentrations – lower costs and lower exposures**
- **Safer compared to single phase semi-synthetics**
- **Superior technical performance**
- **20% overall cost reduction even though higher cost per litre**
- **Renewable feedstock**
- **Waste can be burned as a renewable energy source**
- **Compatible with waste water treatment plants**
- **2 million litre reduction in emulsion use**
- **Cleaner swarf and cleaner shop-floor**
- **Longer system life**

Predicted saving at the Bridgend plant up to 40%.

Potential saving of \$250,000 p.a. at Bordeaux transmission plant.

## **Additional information**

NFFCC <http://www.nfcc.co.uk/publications/nfcc-annual-report-2004-the-first-year>

Ford <http://corporate.ford.com/doc/sr10.pdf>