



The UK arm of a global manufacturing company specialises in the manufacture of impellers for automotive turbochargers and aerospace turbojet engines. Fully automated 5-axis machining of the titanium, Inconel and forged aluminium impellers requires high precision and very predictable tool wear. The manufacturer runs 32 machines on site, both roughing and finishing the impellers.

THE CHALLENGE

Tool costs are a significant contributor to the overall component cost, especially for titanium and Inconel impellers. Tool life savings are vitally important to improve the competitiveness of the manufacturer versus its rivals. The manufacturer wanted to test a new coolant with the aim of increasing tool life without decreasing machine productivity.

THE SOLUTION

After meeting with representatives from Master Fluid Solutions, the components manufacturer agreed to a trial of HyperSol 888NXT. This new class of synthetic water-soluble metalworking fluid was specifically designed for machining the harder metal alloys typically used in aerospace applications. As such, it was the obvious choice for this manufacturer's challenging requirements.

THE RESULTS

The trial of HyperSol 888NXT lasted four months in the titanium impeller end milling application and one month in the slot cutting application of forged aluminium PS3955. By all accounts, the trial was a resounding success for the components manufacturer. HyperSol 888NXT increased tool life by **22%** on the titanium milling application versus a well-known, very high performance aerospace emulsion product. Feedback from machine operators indicated that it was also a much better product to work with due to its superior cleanliness, lack of odour and significantly lower consumption.

Additionally, the components manufacturer achieved £5,040/ €5,500 annual savings per machine. The projected annual tool life savings will be £80,640/ €88,100, and annual coolant concentrate consumption savings are expected to be £15,000/ €16,367. For the components manufacturer, using HyperSol

888NXT not only greatly extends tool life but also further reduces overall costs by keeping machines and components cleaner, and by reducing coolant concentrate consumption by **50%**.

THE NUMBERS

- **22% increase in tool life**
- **£5,040/ €5,500 annual savings per machine**
- **Annual tool life savings will be £80,640/ €88,100**
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