

Houghton *Hocut 8640*, an *Industrial Solutions Group* Case Study

Industry: Aerospace Components Manufacturer

Application: 15-5PH Stainless Steel on Niigata SPN 40 Horizontal Machining Center

Problem Being Addressed: Milling a part with extremely hard material and complex geometry contributed to a high fluid and labor spend when using a competitor's high-end vegetable-based coolant. It required high concentrations and maintenance (frequent coolant make-up, high additive usage), and its poor sump life lead to frequent cleanouts and recharges. Trialing a popular semi-synthetic coolant addressed the maintenance and sump life issues, but required even higher concentrations, and - more detrimental - tool life suffered.

The **Customer's Desired Outcome** was a coolant that could provide at least original tool life without sacrificing sump life (6-month minimum) and operator acceptability (clean, minimal odor, minimal maintenance) was needed.

Houghton's Solution was the *Hocut 8640*, an advanced soluble coolant designed for heavy duty machining, grinding and honing applications for a wide range of ferrous and aluminum alloys, especially harder stainless and high-nickel alloy steels.

The **Outcome** was that *Hocut 8640* was able address the customer's coolant requirements, and more:

- Tool life stabilized. Able to run same number of parts per tool as with original vegetable-based coolant
- Coolant usage reduction. Reduced required coolant concentration from 10-15% to 9-12%. Little coolant drag-out led to reduction in makeup, great reduction in waste and associated cost and labor, and better concentration control.
- Sump life improvement and operator acceptability. Coolant runs clean, splits out tramp oil, keeps machine tool clean and free of scum, residue, and odor. Sump life expected to exceed the minimum 6-month requirement
- Eliminated costly coolant additives and associated time/labor; previously required pH booster, defoamer (not foaming even with through-the-tool high-pressure applications (1200 psi) in soft water), water hardeners (calcium acetate, Additive 34), biocide, fungicide
- Multi-metal compatibility. Able to run other materials (Titanium, Renee, Inconel) on the same machine tools without the need for coolant or concentration changes. Full shop conversion potential to improve inventory control

Fluid Summary. The customer's expectations have been exceeded. *Hocut 8640* performs exceptionally in terms of lubricity and chip removal; along with lowered usage, waste, labor, and downtime, and with more consistent concentration control. The greatest benefit has been the elimination of additives; not only are they costly and labor-intensive, but also indicative of inconsistent coolant chemistry that can lead to additional parts inspection, as well as staining and rework.

Concentration and Special Controls. Required concentration is lower at 9-12% compared to previous vegetable-based (10-15%) and semi-synthetic (15-22%) coolants. Machine tool speed and feed rates required no adjustment.

Value-Added Information for Cost Justification. Reduction in coolant spend; elimination of additives spend. Reduction in labor related to coolant and additive adds. Reduction in waste, labor and downtime related to sump cleaning.