Machine Coolant Reduction Strategy

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Machine Coolant Reduction Strategy

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Same as Report (SAR)
Mission Overview

The 309th Commodities Maintenance Group provides Maintenance, Repair, and Overhaul of Landing Gear, Hydraulics, Armament, Power Systems, and Advanced Composites Products and Components

Four Squadrons
530th Power Systems Squadron
531st Commodities Squadron
532nd Landing Gear Squadron
533rd Technical Repair Squadron
Mission Overview

Hydraulics

Structural Sup

Power Sys

Chrome Plating

Ultrasonic Test

Wheels/Brakes

Autoclave Cure

LO Testing

Landing Gear

Machining

Composites

Warfighter's First Choice
Background

- After manufacture & Chrome Plating:
  - Machining & grinding
  - Coolant is used to cool and lubricate
Background

**Coolant:**
- Generated from six different machine shops
- Mixture of 90% water & 10% emulsified oil
- Degrades (tramp oils, bacteria, particles)
- Disposed of approximately 50,000 gallon annually
Problem

- Past Disposal Method Pumped to the Industrial Waste Treatment Plant (IWTP)
  - Started causing problems with new Permit Limits
  - Banned discharge in 2006
- Forced us to either Drum or Tank:
  - Non RCRA cost of $100K+
Solution

- Three prong Approach:
  - Find a cheaper disposal contractor
  - Increase the coolant working life
  - Reduce volume of waste
Solution

- **Approach One:**
  - Contracted Safety Kleen - $1.00 per gallon (Non-RCRA)
  - Reduced disposal cost by 50%

- **Approach Two:**
  - Purchase 3 Freddy TOS Units
    - Filter
    - Kill bacteria
    - Remove tramp oil
  - Doubled service life
  - An additional cost savings of 50%
Solution

- **Approach Three:**
  - Reduce volume even further
  - Tested Sanborn UFV 250Ultra filtration
  - Membrane filtration of permeate (water)
Solution

- Approach Three, Cont’d:
  - Coolant transferred to UFV250
  - Dehydrated with UFV250
  - Concentrated to 10 – 15% of original volume
Solution

- Approach Three, Cont’d:
  - Concentrate transferred to holding tank for processing to Safety-Kleen
  - Oil recovery and final disposal
  - 2K to 3K gallons annually, down from 50K
Cost$$$

- **Original Cost for Disposal**: $100K
- **Switching Disposal Contractor**: ($50K)
- **Implementation of Freddy TOS:**
  - Equipment cost: $15K
  - Cost avoidance: ($25K)
- **Implementation of UFV250:**
  - Equipment/installation cost: $35K
  - Cost avoidance: ($20K)
Cost$$$

Bottom Line!!

95% Reduction in Coolant Waste (bulk) Disposal and Costs
Questions?