

AR No. 4

Recycle Cosmolubric On-site

Recommended Action

More than 2,000 gallons of Cosmolubric HF-122 is purchased annually for routine maintenance of the 150 ton hydraulic press. Annual purchase and disposal costs associated with this fluid are nearly \$30,000. Installing centrifugal separation equipment will allow up to 50% of the fluid to be reclaimed during routine maintenance, significantly reducing purchase and disposal costs.

Assessment Recommendation Summary			
Waste	Cost	Implementation	Payback
Gallons	Savings	Cost	(years)
1,095	\$12,795	\$37,900	3.0

Background

The 150 ton hydraulic press is the primary piece of equipment used in the forging process. Routine maintenance practices require the fluid to be replaced regularly to ensure proper equipment operation. The replacement Cosmolubric HF-122 fluid currently costs \$11.75/gal. Fluid disposal must be handled by a certified petroleum waste hauler at a cost of \$0.50/gal plus \$3.00 per barrel. Based on records supplied during our visit, the current volume of fluid replaced annually is 2,190 gal.

Based on conversations with oil separation equipment vendors, centrifugal equipment can reclaim up to 50% of the Cosmolubric during routine maintenance operations. The equipment can be installed for off-line processing of the fluid when the press is not operating. Pumps will pull the fluid from the hydraulic sump and pass through the centrifugal separator. During the separation, water and other common impurities will be removed and clean fluid will be returned to the sump. This process will extend the life of the fluid and reduce purchase and disposal costs significantly.

Anticipated Savings

Primary savings will result from decreased purchase of Cosmolubric. According to a vendor representative, a 50% reduction in purchase and disposal volumes is a reasonable conservative estimate for this application. Based on your records, 2,190 gal. of Cosmolubric is currently used annually. Installing centrifugal separation equipment will reduce this requirement to 1,095 gal./yr. The costs associated with current and proposed conditions are summarized in the following table.

Cosmolubric Cost Summary								
	Unit	Current			Proposed			Cost Savings (CS)
	Cost	Qty	Units	Cost	Qty	Units	Cost	
Oil Waste Disposal	\$ 0.50	2,190	gal	\$ 1,095	1,095	gal	\$ 548	\$ 548
Drum Disposal	\$ 3.00	49	drums	\$ 148	25	drums	\$ 75	\$ 75
Replacement oil	\$11.75	2,190	gal	\$25,733	1,095	gal	\$ 12,866	\$ 12,866
Sales Tax (on new oil)	8.60%	--	--	\$ 2,213	--	--	\$ 1,106	\$ 1,106
Total				\$29,188			\$ 14,595	\$ 14,595

Savings will be offset by annual operating and maintenance costs. The equipment will require periodic cleaning to remove sludge deposits, along with routine inspection and maintenance. A conservative estimate of \$1,800, which is 5% of the cost of a new unit, will be used for annual O&M expenditure. Total savings (TS) will be

$$\begin{aligned}
 \text{TS} &= \text{CS} - \text{O\&M} \\
 &= \$14,595 - \$1,800 \\
 &= \$12,795
 \end{aligned}$$

Based on equipment specifications, operating energy requirements will be minimal. Total package power requirement is approximately 1.5 kW. Assuming 2,080 annual operating hours, total energy will be 3,120 kWh. The cost associated with this energy is negligible and is included in the annual O&M estimate.

Implementation Cost

Two options are available for equipment, purchasing either new or remanufactured equipment. Equipment costs for both options, as quoted by a vendor, are listed in the table below. Price quotes are based on a skid-mounted, pre-assembled unit. Skid-mounted equipment was recommended by the vendor to minimize installation. Based on past installations, the vendor believes 4 hrs of labor by an electrician and a pipefitter will be required. Cost of miscellaneous materials such as pipes, fittings and wiring is estimated at \$1,500. Total implementation costs for each option are summarized in the following table along with respective simple payback periods.

Implementation Summary		
	New	Remanufactured
Equipment Cost	\$ 36,000	\$ 18,000
Installation labor	\$ 400	\$ 400
8 hr labor hours @ \$50/hr		
Installation Material	\$ 1,500	\$ 1,500
Total Cost	\$ 37,900	\$ 19,900
Payback (years)	3.0	1.6