

Nevada Small Business Development Center Business Environmental Program

CS-FY9401007

ANTIFREEZE RECYCLING AT MARIGOLD MINING COMPANY

Waste Reduction Case Study

PROJECT

Marigold Mining Company, a 109 employee mining company located in Valmy, Nevada, received grant funding from the Nevada Division of Environmental Protection (NDEP) to install an antifreeze recycler on-site to recycle spent antifreeze. Prior to installing the recycler, Marigold was reusing the antifreeze as a tire ballast and to keep their drilling fluid from freezing. The recycling system saves money on the amount of raw antifreeze they purchase. The purchase of the recycler has eliminated the need to dispose of the spent antifreeze they would have ultimately generated and the cost associated with its disposal.

BACKGROUND

Prior to installing the antifreeze recycler, Marigold was generating approximately 75 gallons of used antifreeze per month, which was used as tire ballast and in drill fluid freeze prevention. By installing the recycler, they have eliminated the need to manage antifreeze off-site, as generation exceeded the need for these uses.

TECHNOLOGY

Marigold Mining Company purchased a Prestone ProClean Coolant Recycler, a filtration based antifreeze recycling system. The system consists of a series of filters which removes suspended particles in the antifreeze. Chemical additives are added to remove metals and oil and grit before the antifreeze is passed through the series of filters. These additives are designed to bind metals so the sludge will pass the TCLP test.

The recycler is capable of recycling antifreeze in a batch of 40 gallons in under two hours. An air driven pump is used to circulate the antifreeze through the filters. Toward the end of the cycle, reinhibitor additives are added to reformulate the antifreeze to proper pH and chemical composition.

WASTE MANAGEMENT

Prior to installing the antifreeze recycler, Marigold Mining was generating approximately 75 gallons of spent antifreeze per month. The antifreeze was stored and utilized as a ballast in tires. Now the antifreeze is recycled on-site and re-used in vehicles. The filters and the sludge generated during recycling will have to be analyzed by a laboratory for lead with the Toxicity Characteristics Leaching Procedure (TCLP) to determine whether they are hazardous waste. If the filter and sludge generated turns out to be a non-hazardous waste under TCLP, Marigold can dispose of the filters as normal trash. Before a filter can be disposed as normal trash, the business must have laboratory analysis documenting the waste is not a hazardous waste.

COST SAVINGS

The total cost of the antifreeze recycler amounted to \$5,170. The Nevada Division of Environmental Protection provided half the cost in grant monies. Marigold estimates a saving of \$1,800 in antifreeze disposal costs by installing the recycler. The savings on virgin antifreeze purchase is \$1,450 per year. Marigold is potentially saving \$3,250 per year. There will be a cost associated with the testing of the filters



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and sludge generated during recycling. The additive kit costs approximately \$120 per 80 gallons of antifreeze recycled. At the rate of ten additive kits per year, the project cost will break even in two and a half years. Note: Marigold's bulk purchase price for antifreeze is extremely low. Antifreeze purchase prices above \$1.75 a gallon will reduce the payback period.

COMMENTS

Recycling antifreeze on-site can save money. It is feasible to install the antifreeze recycler even in a small shop; however, care must be taken to use the appropriate additives to rejuvenate the spent antifreeze and select an appropriately sized unit for the quantity of antifreeze to be recycled. There are various brands of antifreeze recycling equipment available that are based on technologies ranging from simple filtration, distillation to ion exchange and reverse osmosis. Selection of the type of recycler required should be based on the volume of spent antifreeze generated and the separation efficiency desired. "I highly recommend other businesses to recycle antifreeze on-site," says John Gilmore of Marigold Mining Company.

ANTIFREEZE RECYCLING EQUIPMENT SUPPLIERS

BG:CASCO, Temple Hills, Maryland
Bob Crovato, (800) 327-8883

Finish Thompson - Automotive of Nevada
2901 S Highland #10B, Las Vegas
Bob Seltzer, (702) 791-0177

Re-Neva Auto Supply
935 S Rock Blvd., Sparks
Don Ellis, (702) 331-2886

Robinair
Reno: Greenfield Enterprises (702) 849-1488
JTE Truck & Trailer Equipment (702) 786-6534
Las Vegas: Cap Warehouse (702) 642-0616

Solar Division of Century Mfg.
Northern Nevada (209)474-7764
Southern Nevada (714) 879-6062

Note: The above listing of vendors and manufacturers is provided for informational purposes only. This list is provided as a service to Nevada businesses in order to assist them with waste minimization. This listing of businesses is not to be construed as actual or implied endorsement of their products or services. Additionally, other business which provide similar products and services may not be listed; this omission is not to be construed as an actual or implied denouncement of those businesses.