Used Oil Ash Reduction
(Simple and Predictable – at last!)

Problem

Used oil that is predominantly from engine oil may contain little water, but ash content may be 0.8-1.2%. Even with the best demulsifiers or with thermal dehydration, treated oil may still contain 0.3-0.6% ash. With the increasing demand for higher quality fuel supplements and the prohibitive cost of re-refining used oil, a solution had to be found.

Solution

ECI revisited the acid deashing technology, and made modifications in the demulsifier, the application and the process. 2 RECOVEROL* demulsifiers were found to perform exceptionally well under slightly different conditions.

A process such as that outlined in Information Bulletin No. 15, was found to yield exceptional and consistently low ash results.

Results

An oil reclaimer in the South utilizes a rectangular 20,000 gallon tank with 2 blade mixers. Wash-water is added in-line when oil is pumped from holding tanks to the "reactor" tank. A total water content of ~20% is best. Then, with the blades mixing, the oil is circulated through an external heat exchanger until a temperature of 160° F is reached. Concentrated sulfuric acid at 4 gal/1000 gal is then added slowly, which bring temperature to around 180° F. After 2 hours of acid contact, ECO 22-4BC or ECO 70BC is added at 2.5 gal/1000 gal and mixed for 15 minutes. Water drop is usually rapid, but after 1-2 days the oil is considered ready. The acid/water is drained off above the solids layer and stored for reuse. The bright, red-black oil, usually analyzing at 0.06-0.08% ash is recovered for sale.

The water phase has been reused 6-8 times, each time adding a little more sulfuric acid. Eventually, the water will be pH adjusted to ~9 to precipitate soluble metals for dewatering and disposal, and the clarified water recycled as wash water.

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