



CASE HISTORY

# Chemical cleaning of the flare line and knock-out drum results in over \$100,000 in maintenance cost savings and 75% reduced down time for a petroleum refinery



## Results Achieved

75% reduction in down time

Over \$100,000 in maintenance cost savings

Zero LEL and zero benzene after 36 hours

No hazardous waste and over 90% recovered hydrocarbon content

## Chemicals Utilized

**FQE** Citrus Degreaser

**FQE** Scale-Solv

A large petroleum refining company in Brazil used FQE® Citrus Degreaser and FQE Scale-Solv products to decontaminate and clean the flare line and knock-out drum.

The drum was estimated to be 1/3 full of organic and inorganic solids. Analysis of the drum contents showed the bottom debris to be 82% solids and 18% liquid entrained within the solids. Of the solid contents, 38% were a mixture of inorganic salts (mostly iron oxide, calcium, and magnesium chlorides and carbonates). The balance of the solids were wax and asphaltenes, with some liquid hydrocarbon.

The knock-out drum was circulated with light cycle oil containing 5% FQE Citrus Degreaser to fluidize the wax and asphaltic solids. The circulation was performed over 18 hours at 66°C (150°F). 1,500 feet of flare piping leading to the drum were also included in circulation. Afterward, the liquid was drained and sent to the refinery slop oil tank for hydrocarbon recovery.

After the removal of the organic debris, the flare line and drum were circulated with a 10% aqueous mixture of FQE Scale-Solv at 60-65°C (140-150°F) for 15 hours. The circulation liquids were monitored for density and pH to ensure the removal of the inorganic contents. On completion, the equipment was

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inspected and found to contain minimal inorganic solids that were easily vacuumed out without adhering to the vessel walls. The vessel was free of free oils and oily solids.

In prior cleaning trials, it took several days to evacuate system of organic and inorganic debris by mechanical means. The plant estimated that over \$100,000 was saved over the conventional method.

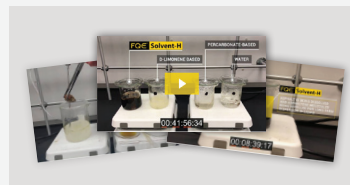
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