CASE HISTORY

US refinery uses FQE® Solvent-H+ to improve safety while reducing outage time and mechanical cleaning costs by more than 50%

Results Achieved

- Reduced Hydroblasting Mitigates Personnel Risk
- Over 50% Reduction in Outage Time
- Mechanical Cleaning Costs Decreased by more than 50%

Chemicals Utilized

- Simple Chemical Application Performed by refinery personnel; no outside contractor support required

A refinery located in the Midwestern area of the United States was looking to improve upon the efficiency and safety of their crude unit exchanger cleaning program.

The refinery typically ran a Heavy Canadian Crude and saw consistent issues associated with heavy organics and asphaltenes. Prior to the vapor phase application, the refinery had utilized hydroblasting as their sole and preferred method to clean exchangers.

Due to consistent heavy fouling, these exchangers would typically take between 12 – 15 ten-hour shifts to complete. Furthermore, hydroblasting posed numerous safety challenges associated with handling high-pressure water. These shortfalls led the refinery to investigate pre-treatment options to reduce the hydroblasting duration and costs.

As a test comparison, the refinery elected to compare the parallel set of exchangers; one with no pre-treatment prior to hydroblasting and the other treated with the patent pending FQE Solvent-H+ product. The Solvent-H+ treated bundle was vapor phase cleaned over a 4 – 6 hour period.

Following the cleaning process, the refinery compared the two parallel sets and found that their hydroblasting man-hours were reduced by over 50%, which made this a significantly safer process. Furthermore, the decreased time led to over 50% in mechanical cleaning cost savings.
CASE HISTORY

Results Achieved

Cleaning efficiency increased over 20 times, saving thousands

Dissolved the asphaltenes and removed all traces of LEL and H2S.

Chemicals Utilized

Minimal sludge deposits were observed.

Equipment Charges

Prior to chemical application, it was confirmed that there was a lack of fluid in the bottoms of the coker fractionator. This resulted in process savings of 12-24 hours of outage time; manpower entry was not required for the cleaning costs and timelines by relocating the injection point and increasing the solvent injection rate during the injection period.

FQE® Solvent-ME was vapour-phased injected with steam into the rail cars at a controlled rate until the effluent coming out of the bottoms drain was oil-free.

To ensure that all the cars were truly de-oiled; down to the porous cavities in the steel surface, FQE® Clean Road was subsequently applied as a final polish.

Canadian crude utilized FQE® Solvent-H, FQE® LEL-V, and FQE® H2S to clean a primary separation settler.

The vessel had a top cylindrical section with an internal diameter of 15.2 meters, a hemispherical roof to contain the vapors released from the froth and solvent, and a conical bottom section with a 60° angle. The settler was enclosed by a deflector and a vapor plate. The product in the vessel was made up of mostly solvent (C5/C6), and bitumen. Solvent-H, FQE® LEL-V, and FQE® H2S were applied to the settler to clean the cone of the vessel.

Previously, the client had utilized terpene-based type chemistries on the towers to issues with LEL and VOC levels that required additional decontamination.

An oil refinery in Wyoming running heavy Canadian crude utilized FQE® Solvent-H, FQE® LEL-V, and FQE® Pyrophoric for their turnaround operations and saved 1 day of outage time.

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