

Petroflo* Prevented Premature Shutdown of Ethylene Quench Oil Tower

Challenge

European Ethylene plant with 11 furnaces cracking ethane (2), naphtha (8) and gas oil (1) and has a 265 short-ton-per-year (240 metric-ton-per-year) oil quench tower capacity with packed internals and a dilution steam ratio of 0.5.

In November 1994, 18 ppm (mg/L) of Petroflo 20Y604 was injected into the gasoline reflux line for fouling control. This treatment dosage was maintained until the scheduled February 1999 shutdown, and visual observations during the outage confirmed no fouling inside of the tower. However, during the March 1999 start-up, a drastic increase in the column delta pressure was observed (from 60 mbars to 160 mbars)

The challenge was to continue ensuring oil quench tower run between plant turnaround (five years) without an unscheduled shutdown or lower throughput.

Solution

The first approach was to increase the Petroflo 20Y604 treatment dosage from 18 to 20 ppm

(mg/L); however, no effect was observed. The Petroflo* 20Y604 dosage was increased to 40 ppm (mg/L) and the tower delta pressure stabilized and fouling was being controlled.

The customer agreed to a contingency plan to inject Petroflo 20Y25 at 55 ppm (mg/L) for 15 days to help improve the tower conditions and its performance.

This on-going program is using only Petroflo 20Y604 at 30 ppm (mg/L) and the tower delta pressure is stabilized at 60 mbars.

Results

- Prevented premature shutdown of unit and reduced tower delta pressure from 160 mbars to 60 mbars
- Filterable solids level increased by 57% compared to previous period
- Increased in frequency of filters cleaning
- Cleaning of one heavy oil exchanger due to polymer carry-over from tower
- New target for tower run length was increased from five to six years



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