

# Case Study 19

## Jet Fuel Clay Treating Trap Filter for Refinery Storage

### Background

Oil refineries produce a wide range of products from crude oil such as sulfur, oils, petrochemical feed stocks, propane, gasoline and many more. Jet fuel is one of the high value products refined from mid-distillates, and clay treatment is the final purification process before tank storage and custody transfer. Attapulgite clay is a common bulk treatment media with a microcrystalline structure that provides high surface area for efficient adsorption of polar molecules that affect storage and transportation stability. Northeast Filter received a call from a refinery that was experiencing unexplained short on-stream life of their jet fuel transfer filters downstream of their storage tanks. They requested an urgent review of their process for root cause analysis and recommendations for corrective actions. Northeast Filter dispatched their VAS team to assist.

### Solution

Upon arrival, we attended a process review meeting with refinery personnel and immediately observed that they currently did not employ trap filtration after their clay treater (before the storage tank). Initially, they were skeptical of this concern since they had operated like this for years without incident. Fluid samples were drawn immediately before and after the storage tank and analyzed for particle size distribution and particle profiling. Excessive counts of clay fragments were present in both samples. The tank was inspected, and they found a thick layer of clay at the bottom of the tank. They then inspected the clay treater internals and found damaged septa screens designed to retain the clay (this was the root cause). Northeast Filter provided a horizontal rental filter to clean-up the lines and protect the storage tank until the horizontal trap filter that they purchased arrived. Both the rental and the purchased filters were sized using the fluid analysis data. They repaired the clay treater and, at great cost, cleaned the tank. Their transfer filter on-stream life improved and OPEX was greatly reduced and stabilized for the past year.



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