

Predator* Allows a U.S. Refinery to Successfully Process Crude Oils with TAN of >2.5

Challenge

A U.S. refinery was processing crude oils with a Total Acid Number (TAN) in excess of 2.5 on a continual basis. Prior attempts to inhibit high temperature corrosion resulted in serious detrimental side effects. The phosphorous based chemistry provided protection, but resulted in fouling, corrosion and catalyst deactivation.

Solution

GE Infrastructure Water and Process Technologies recommended Predator 6N1401, a new technology to control corrosion that is phosphorous free. Predator 6N1401 offers feedstock flexibility with virtually no increased risk to assets, products or processes.

The GE representative thoroughly surveyed the crude unit with respect to Naphthenic Acid distribution, speciation, velocities, temperatures, metallurgies and corrosion history. Feed points and monitoring points were selected to insure maximum coverage at the most critical points.

A resistance corrosion monitor (RCM), shown in Figure 1, assured that corrosion was effectively controlled. The RCM measured wall thickness, with 6 Sigma accuracy, to determine a change in wall thickness due to corrosion. It detects changes in wall thickness of just 2%.

Results

Predator 6N1401 was fed for a two year run with extensive monitoring. Figure 2 shows the frequency of corrosion in the target range for the Phosphorous and Non-Phosphorous treatment programs. Corrosion results remained within the targeted range matching or exceeding the phosphorous

results while all of the issues associated with phosphorous addition were eliminated.

During a planned outage, subsequent inspection using Digital Radiography confirmed the effective corrosion control results and the program continues successfully.



Figure 1: Resistance Corrosion Monitor

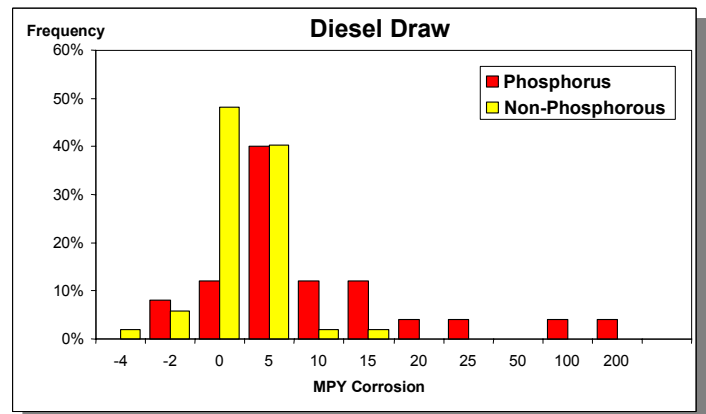


Figure 2: Frequency of corrosion in target range

