

HEAT EXCHANGER EFFICIENCY RECOVERY

Introduction

The newest edition to ZymeFlow Decon Technology's product line, Rezyd-HP™ dissolves hydrogen deficient hydrocarbon deposits. Used in a ZymeFlow Decon Technology process, the new chemistry recovers heat efficiency in heat exchangers to prolong the time in between mechanical cleaning.

Project

The ZymeFlow Decon Technology team partnered with a Polish refinery to recover heat efficiency on two vacuum column heat exchangers processing heavy vacuum gas oil and desalted Russian blended crude oil using ZymeFlow's new chemistry.

Challenges

Frequent mechanical cleanings cost the refinery significant resources in money, manpower, and loss of production. The refinery was skeptical that a chemical could penetrate the plugging to regain efficiency.

Past Procedure

The customer had previously depended on stopping the unit for frequent mechanical cleanings. Cleanings were required every two weeks to keep the heat exchangers operating efficiently. Although mechanical cleaning would still be necessary, ZymeFlow Decon's process could prolong the time in between mechanical cleaning and keep the vacuum columns in production until the next turnaround.

Engineered Solution

Refinery operations scheduled two heat exchangers, to be cleaned using ZymeFlow's new chemistry. Two other heat exchangers would remain untouched to serve as a comparison for efficiency recovery. When the ZymeFlow team arrived they began circulation on the tube side of the heat

exchangers. A 3% solution of Rezyd-HP was circulated with LCO for 12-14 hours. The recommended procedure included heating the solution to 150 °F (65 °C) however, only 100 °F (38 °C) was achieved. On the shell side, the same percentage of chemistry was circulated for 12-16 hours, then flow was reversed for an additional 6 hours to contact all surfaces.

Results

Refinery operations reported a heat efficiency recovery of 80% on the two heat exchangers that were cleaned with ZymeFlow's new chemistry, when compared to the heat exchangers that were not cleaned. The refinery was extremely impressed with the results. ZymeFlow's cleaning procedure and new product could drastically reduce the number of mechanical cleanings the refinery has to perform. The goal is to create a preventative maintenance plan using the new procedure so that mechanical cleaning would only be necessary during the turnaround.



Pictured above: Customer pulled tubes to view results.