

DECONTAMINATION OF A FLUID CATALYTIC CRACKING UNIT AND ITS SURROUNDING VESSELS AND PIPING

Project

After successfully completing a small decontamination job for a South Louisiana refinery, ZymeFlow was invited to return for a large turnaround project. The job included the decontamination of a Fluid Catalytic Cracking Unit (FCC) and Gas Condenser with its surrounding vessels and piping. Equipment included: columns, absorbers, strippers, knock out drums, and debutanizer--17 pieces in total. Time was a critical factor therefore the unit needed to be ready for entry in a short time-frame.

Challenges

In the past, the facility had experienced fires in this particular unit and was anxious to eliminate possible pyrophoric iron sulfide that could ignite upon entry. The secondary concern was to keep the equipment footprint small, so as not to interfere with the refinery's own operations and personnel.

The previous cleaning methods had included using a permanganate based chemical. The chemical was highly exothermic and when the cleaning was complete, there was fouling in the bottom of the tower. The chemical could only

be applied through circulation and needed a large space for all of its equipment and hoses which had disturbed refinery operations and created a safety hazard.

Engineered Solution

The ZymeFlow planning team recommended Zyme-Flow® UN657 chemistry in a Vapour-Phase® application. Upon completing detailed planning, P&ID drawings, and several meetings with the plant operations team, the project was ready to begin. The job started by decontaminating the associated equipment first then moving into the main column. The main column was drained and purged by refinery personnel according to operation's standard procedures. When the FCC was ready to begin decontamination, the ZymeFlow team connected steam injection points to the unit to begin the Vapour-Phase Process. Once the unit was tested and confirmed that the steam was reaching all points in the system, ZymeFlow UN657 was injected into the steam line at a pre-determined rate. Upon continuous testing, an injection point was moved after the team found a dead leg in the line. They quickly fixed the problem and chemistry injection commenced.

Results

After 10 hours of Vapour-Phase, ZymeFlow personnel confirmed contaminant levels in the main column: H2S and LELs measured 0. Upon opening, there was no threat of pyrophoric activity and refinery personnel were able to enter and perform maintenance and hot work without incident. The lead engineer was very pleased with the ZymeFlow process and personnel and was eager to use ZymeFlow for future turnarounds.

