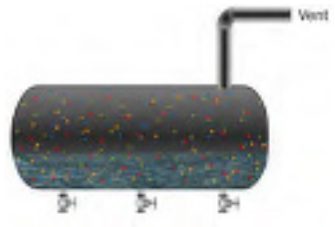
BOIL OUT PROCEDURE DECONTAMINATION OF A REFINERY'S **CRUDE UNIT DESALTER**

Project

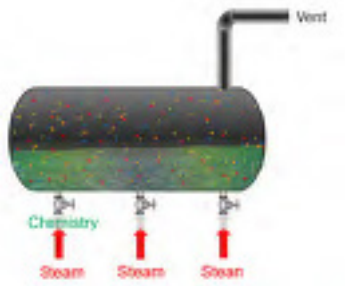
ZymeFlow was called to decontaminatea crude unit desalter at a major US refinery. The refinery had encountered problems with the unit and needed to open it for inspection and maintenance.

Challenges

There was a large build-up of sludge inside the desalter that would be difficult to remove. The refinery knew that it was heavily contaminated and therefore would be extremely difficult and unsafe for personnel to open and manually remove. ZymeFlow was charged with decontaminating the vessel and eliminating all LELs, benzene, hydrogen sulfide, and pyrophoric iron sulfide so remaining deposits could be removed quickly and safely.



Fg. 1: Oil floated off, drained water to 30%



Fg. 2: Steam added, followed by chemistry

Fg. 3: Steam continued for less than 10 hrs

Fg. 4: Vessel drained, opened, and solids easily removed

Engineered Solution

The crude unit desalter was decontaminated using ZymeFlow's boil out procedures. The desalter was partially filled with water to float off the excess oil and then de-inventoried to 30% volume. Steam lines were established to heat the vessel and provide agitation. Two chemistries: Rezyd-X® and Zyme-Flow® UN657 were then injected into the steam lines. The chemistry and steam combination provided agitation to ensure the chemistry contacted as much sludge as possible, therefore treating the contaminants. Zyme-Flow UN657 and Rezyd-X, once in contact with the sludge, freed the LEL and benzene to the flare while oxidizing the hydrogen sulfide and pyrophoric iron sulfides. At the same time, Zyme-Flow UN657 also traveled in the steam and without adding a separate step, the vapor space above the sludge was decontaminated. The desalter was then drained and opened once atmospheric levels were tested to be safe for entry.

Results

The ZymeFlow boil out procedures were completed in less than 10 hours. When the equipment was opened, atmospheres were found to be safe. Samples of the remaining deposits were tested by the refinery personnel and were within the required tolerance for hydrocarbons. The remaining deposits were subsequently removed with a vacuum truck and inspection commenced within two hours of gaining equipment entry. This was a huge improvement from past treatment options and the refinery had very little trouble with the final clean out. The project saved a large amount of time and was considered an overall success.