BAKER HUGHES
a GE company

Detailed engineering delivers safe, on-time refinery decontamination

As part of a refinery turnaround, decontamination of equipment must be performed to ensure the equipment is in safe and suitable condition for manned entry. As the safety of people and environment is of the highest priority, an effective decontamination must be performed.

A refinery in France was facing the largest shutdown of process units it had ever attempted in order to perform a scheduled maintenance turnaround. Decontamination activities across multiple units had to be considered. With so many process units being shut down, the refinery was facing challenges in waste management, decontamination method selection, and critical path timelines.

In 2011, Baker Hughes, a GE company, (BHGE) had completed a similar, but smaller, project at this refinery. The client had implemented many of the improvements that BHGE had recommended, reducing the amount of mechanical cleaning post-decontamination in this recent project.

Having worked with BHGE on this site, at other locations in France, and abroad the client chose BHGE for this large-scale decontamination project.

Projects of this nature present a variety of challenges, all of which must be addressed through detailed planning and engineering. BHGE's Specialty Cleaning Services team worked with the client's operational, technical, and environmental teams to produce a detailed decontamination and waste minimization strategy for the upcoming shutdown.

Major consideration was given to selecting the most suitable decontamination method available, given constraints by the refinery.

For example, the FCC unit required a combination of liquid circulation to remove some expected heavy fouling within the quench circuit and vapor decontamination for the remainder of the unit to de-oil and de-gas the remainder of the FCC. Other units were decontaminated using a vapor decontamination only.

Challenges

- Establishing the most suitable decontamination methods for each unit
- Minimizing waste
- Multiple unit shutdowns occurring simultaneously

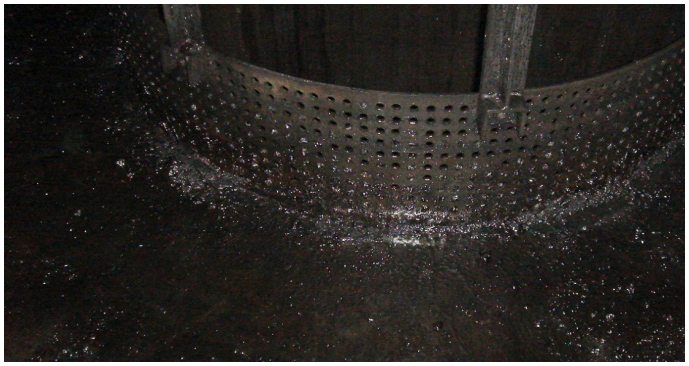
Results

- Decreased overall decontamination time, enabling the refinery to commence maintenance activities ahead of schedule
- Improved overall decontamination and cleaning results, subsequently reducing mechanical cleaning during the maintenance window
- Saved 56 hours from forecast decontamination times

The detailed decontamination plan was then executed and led by the same group that established the plan with the client. This continuity of BHGE leadership at the site level produced a flawless execution of the decontamination of multiple process units both simultaneously and/or overlapping windows of execution.

A combination of the BHGE team's in-depth knowledge of hydrocarbon processing, deep understanding of decontamination and the mechanisms of fouling, as well as superior environmentally friendly cleaning products, the client received a safe, on-time decontamination project that enabled maintenance to commence on schedule and on budget with all safety and environmental issues addressed.

The effective decontamination and cleaning of equipment with the **Smartclean™** range of products resulted in an estimated savings of $500,000 USD to the overall decontamination window allowing maintenance to commence ahead of schedule.



Vacuum tower vortex breaker (above) are clean and debris free after a combined liquid circulation/vapor phase decontamination. Crude tower wash trays (below) after a vapor phase decontamination only.

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