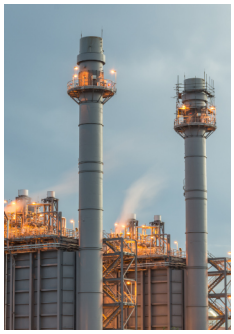
ProDecon® Case Study
European Refinery

Sour Water Stripper Decontamination



PROJECT HIGHLIGHTS

- BATTERY LIMIT TO BATTERY LIMIT DECON
- 0% LEL, 0ppm H_2S, <1ppm BENZENE, 0ppm CO
- REDUCED TURNAROUND SCHEDULE
- COMPLETE NEUTRALISTION OF IRON SULPHIDE
- REDUCED NEED FOR MECHANICAL WORK

THE CHALLENGE

A refinery in Europe asked ProDecon® to undertake the full decontamination of the refinery's Sour Water Stripper (SWS) unit. The full unit decontamination was undertaken from battery limit to battery limit.

Sour water streams that come from many different units rewuire conditioning so they can be discharged or reused. The SWS unit removes ammonia and hydrogen sulphide from these streams. Mostly the sour water comes from the distillation unit, the fluid catalytic cracking unit, the catalytic reforming unit, coker and acid removal units. The different sour water streams from these units are collected in a surge tank for centralised processing via heat exchangers and one or two stripper columns in series. The ammonia and hydrogen sulphide are removed by a combination of pH control and heat.

The contamination found in these units usually is:

- Organic deposits.
- Inorganic deposits
- Pyrophoric deposits
- Explosive hydrocarbon vapours
- Fatal gases
- Carcinogenic gases

THE SOLUTION

The process equipment of the SWS usually accumulates high concentration of hydrogen sulphide. ProDecon's® H_2S scavenger, ProDecon-216™ chemistry is capable of treating high concentrations of H_2S in just a couple of hours. The next step in the decontamination process was to remove the organic deposits and neutralise the pyrophoric iron sulphide. V-Purge™ was used to cover these two decontamination requirements simultaneously. V-Purge™ incorporates sophisticated chemistry that removes hydrocarbon deposits, eliminates LEL, H_2S, benzene and other hazardous gases and oxidises pyrophoric iron sulphide deposits in a single step. Another ground-breaking function of V-Purge™ is that it separates at its water and oil phase in a short period of time without the addition of emulsion breaker.

The process of decontamination was monitored by ProDecon's® own gas sampling method using specialty testing equipment and complex field analysis. This helped to take samples at different times in a safe manner and be able to detect the end of the decontamination procedure as early as possible. The early detection of gas free conditions helped reduce the time of decontamination and the use of excess chemical resulting in more waste production.

THE RESULTS

ProDecon® successfully completed this project within the allowable timeframe. Sampling and testing proved the efficiency of decontamination and pyrophoric neutralisation. There was no odour and no complaints regarding irritation from those working inside the vessel. There were no issues with interference to sampling / monitoring equipment, which could cause vessel entry delays. The cleanliness of the vessels' internals was reported to be very good.

For enquiries:
ProDecon®
E: sales@prodecon.com
T: +44 (0) 1270 446601
www.prodecon.com

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