CASE HISTORY

Chemical decontamination of a natural gas processing plant's operating equipment resulted in fouling u-values of the heat exchanger decreasing from 0.054 to 0.04

Results Achieved

Within 24 hours all benzene, H_2S and LEL levels were zero

Equipment decontaminated of tars, gases, and oil

Inspection found nominal scale deposits in dead areas of equipment

U-values on heat exchangers improved, decreased fouling factor average of 0.054 to 0.04

Chemicals Utilized

FQE LEL-V

FQE Oil Degreaser

FQE Scale-Solv

FQE H_2S Scavenger

A natural gas processing plant scheduled an outage to decontaminate operating equipment prior to conducting maintenance work.

The plant's production capacity was negatively impacted by debris accumulation and chemical cleaning was scheduled to increase production and improve heating efficiency.

The client's needs were to bring the LEL level below 1%, benzene concentration under 1.0 ppm and to accomplish the degassing/decontamination within 48 hours. Following the organic decontamination, the plant wanted equipment typically fouled with water-born scales to be chemically cleaned to improve product through-put and heat efficiency. The plant feed is wet natural gas with hydrogen sulfide at over 100 ppm.

The process areas to be cleaned and decontaminated were the glycol contactor, the de-propanizer, de-ethanizer towers, the caustic wash system and all

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associated cross heat exchangers and piping. The equipment is typically fouled with organic tars entrained in the incoming gas stream and water-born inorganic scale.

The chemical products were FQE® LEL-V, FQE Oil Degreaser, FQE Scale-Solv and FQE H_2S Scavenger. Different concentrations were used in each system. The decontamination process was initiated with a combination of FQE Oil Degreaser and FQE H_2S Scavenger to de-oil/ remove organic debris and hydrogen sulfide gas. Following the system de-oiling, FQE LEL-V was used to degas the equipment of light-end hydrocarbon gases. After the equipment was properly degassed and de-oiled the equipment was circulated with FQE Scale-Solv to remove any inorganic scales that were present inside of the equipment. Piping, heat exchangers and where possible, operating towers were included in a single loop chemical cleaning to optimize the efficiency of decontamination.

The equipment was decontaminated of tars, oil, benzene / LEL and hydrogen sulfide levels were zero within 24 hours. Descaling the equipment required an additional 10 hours to complete. Maintenance activities were able to be started upon draining the equipment and a water rinse. The equipment was free of oils, gases and inspection found nominal scale deposits in dead areas of the equipment.

Inspections on heat exchangers were acceptable with subsequent improved U-values, increased duty and a decreased fouling factor average of 0.054 to 0.04.

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Contact us

Head Office
Deer Park, Texas
4820 Railroad Street
Deer Park, Texas 77536

+1 (281) 476-9249

Calgary, Alberta
Suncor Energy Centre, West Tower
#5100 – 150 6th Ave SW
Calgary, Alberta T2P 3Y7

+1 (403) 538-3050

Perth, Western Australia
14 Cocos Drive
Bibra Lake, Perth, WA 6163

Office: 08 9434 3919
Intl: +61 8 9434 3919

fqechemicals.com