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CASE STUDY

CLEANING AND DEGASSING OF SOUR WATER TANK AT CRUDE OIL PROCESSING PLANT

S.T.AR. TEAM

ISO 9001:2015

Scope

Cleaning and degassing of sour water tank at crude oil processing plant using **SCAVEX** and **ROC 60 VP.**

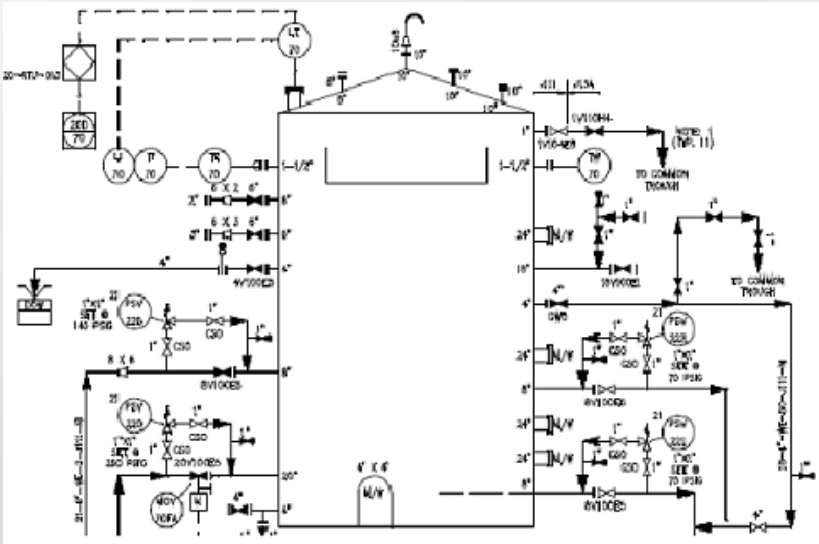
The *Problem*

A major southern US oil refiner planned a discharge and clean out of their sour water tank. The sour water tank is typically a high hazard, high risk tank used to store and cycle increasingly soured water from a unit process. At some point in operations, this process fluid becomes too contaminated for use and must be discharged. Aside from hydrogen sulfide contamination resulting from the process use, the fluid will also contain dissolved organics, organic sludge, suspended solids, and other potentially hazardous materials. This fluid must be properly treated prior to disposal and the tank freed of solids and vapor space contaminants before being put back into operation.

Our *Solution*

The dimensions of the sour water tank indicated a 40.84-meter (134 ft.) outer diameter with a 18,995 m^3 (119,400 bbl) volume capacity. The final fluid height was measured at 0.46 meters (18 inches) indicating a holding of 600 m^3 (158,730 gal) of residual soured process water.

The operator of the facility noted that the fluid contained approximately 10,000 ppm_w dissolved hydrogen sulfide with the tank vapor space contaminated with 120,000 – 150,000 ppm_v of gaseous hydrogen sulfide.



P&I Diagram of Sour Water Tank

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Our *SOLUTION* *(continued)*

West Penetone worked with the client's industrial cleaning contractor to develop the most efficient chemical treatment program, based upon the following execution schedule (seen below):

Through Stages 2-4, the remaining contents of the sour water tank were mixed and treated with a dilution of the hydrogen sulfide scavenger **SCAVEX** in sweet water.

In Stage 6, the decontamination product, **ROC 60VP,** was applied to free the vapor space of remaining H_2S and VOC contamination.

The sour water tank was then able to be opened safely for the contractor to make entry for performing the final clean out stages utilizing a combination of **ROC 60VP** and **CITRIKLEEN** degreaser.

STAGE	TASK
1	Rig in / MOC
2	Drain, refill, and sweetening
3	Cold-tap manways & Rig-in completion
4	Tank circulation
5	Draw down
6	Vapor-phase degassing
7	Robotic cleaning
8	Fine cleaning

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RESULTS ACHIEVED

- **SCAVEX** used in the sweetening process reduced H_2S in the remaining tank contents from 10,000 ppmw to less than 500 ppm_w and reduced vapor space contamination to trace levels within 24 hours and verified by potentiometric titration and pull-tube respectively. No release issues or extreme pH adjustments prior to or after discharge and disposal were reported.

- The vapor-phase process utilizing **ROC 60VP** provided safe access for opening the manways with H_2S reduced to 0 ppm and LEL to 0% and, when applied in combination with **CITRIKLEEN**, minimized final tank clean out times.

A comprehensive and ***integrated approach***

With over 100 years of product development, manufacturing and application experience, the West Penetone family of companies has designed and patented many products to satisfy the needs of our clients world wide.

Our technical group provides customers effective support to ensure that contaminents are paired with the right chemistry for any task.

Establishing and maintaining a collaborative approach with our customers in tackling their operational and maintenance challenges is key to realizing efficiencies and cost savings.

Questions? solution@westpenetone.com

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