MYCELX

3rd Annual OIL & GAS AWARDS Gulf Coast WINNER

Winner of the 2015
Water Management Company of the Year

CASE STUDY

Turnaround Water Treatment for Petrochemicals

CUSTOMER: Petrochemical Company

LOCATION: Qatar

Application

Treat complex turnaround wastewater and provide water characterization expertise for safe discharge to sea

FLOW RATE:

10 m3/hr for highly contaminated C9+ Tank and Quench Water
40 m3/hr all other turnaround process waste water

OBJECTIVE OF THE TREATMENT

- Handle fluctuating flow rates and concentrations
- Treat complex streams with multiple contamination sources
- Continuously characterize inlet and optimize the treatment solution
- Consistently meet the discharge requirements

DATA

MYCELX Turnaround System Performance

Parameter	Discharge Requirements	C9+ and Quench		Decontamination Processes	
		Avg Inlet	Avg Outlet	Avg Inlet	Avg Outlet
pH	6 – 9	10.2	7.6	8.8	6.2
TSS	50 mg/L	19,800	29	617.4	41.6
O&G	10 mg/L	15,095	0.3	112.8	10
COD	150 mg/L	34,400	110.7	880.7	97.6

Challenge

A petrochemical refinery in Qatar conducts turnarounds every five years which requires a full facility closure to perform maintenance activities, process and system upgrades, optimize the existing processes, de-bottleneck operations and de-inventorying equipment. In the past, turnaround water generated by the above activities would be trucked or hauled-off with costs dependent upon the composition as well as concentration of contaminants.

The turnaround water was characterized by high fluctuations and concentrations of contaminants such as oil, benzene, TSS and COD and presented some of the most complex waste water treatment challenges in the petrochemical industry. The customer's existing conventional treatment system was designed to handle normal plant operational contamination and flow rates but could not handle the difficult turnaround water. This 1.3 million MTA ethylene cracker petrochemical facility in Qatar required a cost effective integrated turnaround solution with water characterization expertise and engineering services finished on time and on budget.

SOLUTION

MYCELX deployed a multi-stage treatment solution with patented technologies in an optimized process to handle various complex emulsion scenarios. Up to 1000 m^3 of highly contaminated C9+ and quench water were treated separately from the 21,000 m^3 of the regular turnaround process water. This approach provided cost savings by optimizing the MYCELX chemistry and media in each stage to best handle incoming contamination.

Continuous water characterization analysis was performed by proprietary analytical testing methods throughout the turnaround to allow for real-time changes to the treatment process which enabled optimized water treatment for turnaround operations.

MYCELX provided a robust, fail-safe, on-site water treatment system that handled a vast range of extreme fluctuating inlet concentrations. A complete turnaround solution was designed and engineered for easy mobilization to site and included start-up and commissioning, decommissioning field service operation and maintenance technical services.

IMPACT

The MYCELX full-service solution delivered enormous savings over haul-off and completed the project ahead of schedule and on budget

- Savings of 50 – 75% over contaminated water haul-off costs. Furthermore, the plant did not have to coordinate haul-off trucks which contributed to further logistical and operational resource savings
- MYCELX treated upset conditions 3 – 10 times higher in maximum concentration of oil and solids than the client anticipated
- On-site treatment with continuous monitoring and optimization met discharge requirements on a continuous basis, regardless of upset conditions
- No harmful VOC or liquid waste generated, with BTEX treated to less than 0.05 parts per million
- Provided additional water characterization expertise and treatment of their stormwater pond to meet discharge to sea requirements