MYCELX
A Whole New Dimension in Oil-Free Water

CASE STUDY

Onshore Produced Water Treatment

CUSTOMER: Anadarko Petroleum Corporation
LOCATION: Vernal, Utah, USA
END USER: Anadarko Petroleum Corporation

Description of Application

Produced water generated by the onsite treatment facility did not meet the oil and grease discharge regulation concentration or the no-sheen requirement for discharge to ponds

FLOW RATE: 4 x 10,000 barrels per day systems.

OBJECTIVE OF THE TREATMENT
To treat the free and emulsified oil from the outlet of the walnut shell filter to meet the no-sheen regulation as well as a discharge concentration of less than 10 ppm of oil and grease

DATA
Inlet concentration between 20 – 140 ppm.
Outlet concentration less than 10 ppm.

CONTACT / REFERENCE: Upon request

Challenge

Anadarko is generating 10,000 barrels per day of produced water on four sites in Vernal, Utah. The produced water has light fuel condensate that has the tendency to form strong emulsions as well as high concentrations of iron sulphides that pose a unique challenge in treating the produced water. The existing multimedia system could not handle the lower micron oil droplets or the emulsified oil in the water. As a result the outlet of the multimedia system was fluctuating from 20 ppm to 150 ppm depending on the degree of emulsion. A system was required that could remove the highly emulsified oil without becoming plugged with the higher concentration of the solids, and could continuously discharge less than 10 ppm to meet the no-sheen criteria required by the EPA.

SOLUTION

MyCelx designed, fabricated and delivered a tertiary retrofit treatment system that reduced the oil and grease concentration of 20 – 140 ppm at the inlet to less than 10 ppm on a continuous basis. The polisher system was designed with multiple stages with each stage utilizing MyCelx polisher media to remove the emulsified oil. The filters were able to handle fluctuations in the emulsified oil concentration as well as the specific emulsion from the effluent of walnut shell filters. The system is very compact and is 1/6th of the foot print of the multimedia filter system and could fit into the existing building without additional infrastructure.

The filters were specially designed to deliver higher efficiency for emulsified oil but with the ability to allow solids through the filters. This custom design enabled the MyCelx system and cartridges to experience a longer run time without becoming saturated or plugged with the solids present in the stream.

The project was nominated as one of the finalists for the “Engineering Project of the Year” award at the 2009 Platt’s Global Energy Awards.

Please refer to the detailed article on this project at http://www.worldoil.com/December-2009-Deoiling-for-discharge-quality-water.html

IMPACT

- Discharge from the MyCelx system reliably less than 10 ppm
- No visible sheen on the discharge/containment pond
- Low operating cost
- Operating continuously since October 2006
- Treated more than 60 million barrels of produced water to under less than 10 ppm discharge requirement
- Handled all the upset conditions that the upstream equipment could not handle
- Custom designed filters treated free and emulsified oil to less than 10 ppm
- Modular treatment system that could be easily replicated on their other sites

Site Layout – Water Tanks