

CASE STUDY: OPEX Reduction through System and Operations Optimization

Overview

Location

Offshore Gulf of Mexico

Treatment System

20,000 bpd water injection system including:

- Seawater lift pumps
- Coarse filters
- Multi-media filters
- Chemical injection
- Gas stripping deaerators
- Injection booster pumps
- Cartridge filters
- Injections pumps

Scope of Work

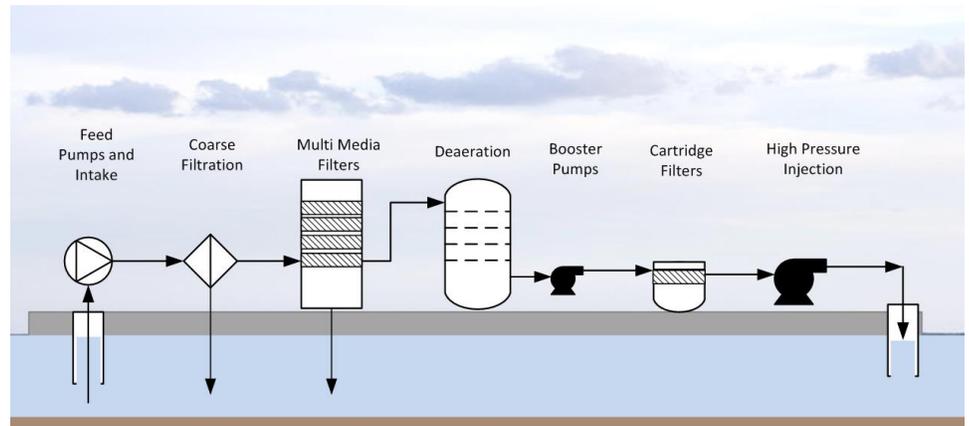
Review treatment system, and provide solutions for optimization of operating procedures and reduction in OPEX.

Results at a Glance

- Decreased chemical consumption.
- Reduced biological growth in the system.
- Improved MMF performance.
- Reduced frequency of cartridge filter change out.

Background

Our client, a major independent oil and gas producer, sought to optimize their existing water treatment system at their offshore water injection platform in the Gulf of Mexico.



Challenges

The objective was to find short, medium, and long term solutions to the problems of the water injection system, which included:

- Leakage and poor performance from the multi-media filter (MMF) system
- High change frequency of cartridge filters due to fouling
- Increasing chemical consumption

Solutions

Water Standard (WS) optimized the client's operating procedures after identifying the key factors limiting the performance of the system and contributing to increasing operating costs.

Short Term Solutions

- Optimized operating recommendations at each stage of the treatment process, including modification of chemical dosing requirements, adjustments to the operating philosophies/ procedures, and cleaning regimes being employed on site.

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- Improved operating procedure for the MMFs, such as increasing the operating flux, longer filtration cycle, chlorine addition to the backwash water, increased backwash flow, and longer rinse cycle.
- Immediate and significant OPEX savings through optimum chemical dosing for the chlorine, oxygen scavenger and biocide, without compromising system efficiency.

Medium Term Solutions

- Reduced frequency of cartridge filters replacement by enhancing biocide dosing regimen prior to the MMFs. Existing dosing regimen was causing significant biological growth to occur within the deaeration towers as biocide had likely been consumed or deactivated by the time it reached the deaeration tower.

Long Term Solutions

- Improved filtration system through replacement of the existing MMF with a robust technology, such membrane filtration, or refurbishing MMF's to enhance its poor performance.

Results

Detailed report which enabled Client to optimize operational procedures and reduce operational costs. After two weeks of WS's site audit, the following improvements were observed:

- Improved operation of the MMF filters, including an optimized backwash schedule which allowed the system to meet the water quality requirements of the waterflood.
- Significant reduction in chemical consumption, including completely eliminating oxygen scavenger addition.
- 75% reduction in the frequency of cartridge filter replacement.
- Enhanced and standardized water quality sampling which enables predictive maintenance.

In addition, WS has begun development of an extended service plan that will further improve operations onboard the water injection platform working closely with the operators, engineers, and safety teams.

Summary

- Immediate savings to OPEX through the review of existing operating processes and philosophies, enhanced by WS's detailed knowledge of water treatment systems through from its team of experienced technicians.
- Easily and readily deployable team to be mobilizes offshore at short notice to address operators' needs.
- Reviews of existing equipment, processes, and procedures will promote OPEX savings safely and efficiently.