

TWO-PASS REVERSE OSMOSIS SYSTEM MEETS ALL GOALS

Increases Capacity, Reduces Maintenance for Process Water and Boiler Feed



Overview

US Magnesium harvests salts from the Great Salt Lake to produce magnesium and other alloy metals and chemicals. The site uses reverse osmosis for both its general industrial process water and boiler feed. The existing, aging reverse osmosis system was unable to keep up with demand and required significant maintenance. After looking at multiple options, US Magnesium partnered with WesTech to provide a new, flexible two-pass [reverse osmosis](#) (RO) system to provide both first-pass quality permeate for the site's industrial processes and second-pass quality permeate for its boiler. WesTech custom designed and built the complete RO system and designed controls to meet the plant's unique needs.

Raw water for this project is pulled from wells that are located below the Great Salt Lake and can have elevated levels of sodium chloride. Taking the feed-water quality into account, the system is designed for and operating at a high overall recovery of 80 percent. Additionally, specialty pleated cartridge filters were installed to handle intermittent high silt density index (SDI) levels and prolong the time between cartridge changeouts. The system is successfully meeting all treated water quality goals with significantly less maintenance and upgraded plant controls. ■

RESULTS

80%

Overall System Recovery

< 0.64 ppm

Final Second Pass

> 90 Days

Between Chemical Cleans

Project Summary

Location:

Dugway, Utah

Applications:

Industrial Process Water
Boiler Feed Water

Processes:

Cartridge Filtration
Two-Pass Reverse Osmosis

Size:

Pass 1: 450 gpm (102 m³/h)
Pass 2: 100 gpm (22.7 m³/h)

Highlights

- Customized system design maximizes feed water source for two separate plant uses.
- Flexible controls modify mode of operation.
- The solution meets all finished water goals.
- Normalization software tracks performance and cleaning.