CASE STUDY

Manufacturing Facility Saves on Chemical Costs and Water Usage with Demineralizer Improvements

Background

A manufacturing facility in the Southwestern US runs city water through a series of zeolite softeners, multi-media filters, activated carbon, reverse osmosis, and four mixed bed demineralizers.

The demineralizers were not operating at their full capacity, leading to poor regeneration and impacting the facility's efficiency and production.

After observing a regeneration in one of the demineralizers, the ChemTreat team identified several issues, including:

- Incorrect resin levels
- High backwash flow rates
- Elevated levels of caustic and acid usage
- Lack of visible separation of the anion and cation resins after backwash and settling

Solution

After a thorough inspection, the local ChemTreat team provided a list of recommendations to improve demineralizer operations.

- Program the control system to adjust flow for each step of the demineralization process.
- Replace resin or separate it to determine the correct amount of anionic and cationic resin in all four vessels.
- Adjust acid and caustic pumps to feed the correct amount of each during regenerations.
- Repair the air flow rotameter.
- Develop a log sheet to allow operators to routinely audit regenerations, monitoring air and water flow, valve positions, anion/cation separation, acid and caustic concentrations, and rinse down conductivity.

Results

Based on ChemTreat's recommendations, facility management took the following steps to improve demineralizer operation:

- Purchased new resin.
- Performed extensive repairs on the vessels to reduce resin loss.
- Added resin to the beds and regenerated the resin manually.
- Correctly programmed the water flow automation process.

These improvements dramatically improved the function of the mixed bed demineralizers.

Estimated Annual Savings

from System Repairs & Enhancements

$71k
in caustic and acid costs

651k
gallons of water required for regenerations

282
hours of operator time for regenerations and rinses

64%
reduction in chemicals pumped into the facility

Results are examples only. They are not guaranteed. Actual results may vary.

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