



## PROJECT BRIEF

Chemical Manufacturing Company Efficiently Turns Contaminated Well Water into High-Purity Boiler Makeup and Process Water

### PROJECT OVERVIEW

A chemical manufacturer in Illinois needed to replace its aging softening and demineralization equipment used for generating boiler makeup and process water from a highly contaminated source. SAMCO designed and manufactured a raw water treatment system that helped the client achieve the required water quality while avoiding process downtime.

### OBJECTIVE

Assist the client in meeting stringent process and industrial boiler makeup water quality requirements:

- Silica < 0.2 mg/L as SiO<sub>2</sub>
- Demineralized water < 2 µS/cm

### SCOPE OF SERVICE

SAMCO provided services comprising basic and detailed process, mechanical, and electrical design and engineering, system fabrication, controls integration, commissioning, startup, and training support.

### CHALLENGES

- Very hard raw water (394 mg/L hardness as CaCO<sub>3</sub>)
- High TDS
- Continuous operation required

### SOLUTION

When a chemical manufacturing plant in Illinois required high-quality water appropriate for feeding its boiler circuit and process streams despite having to draw from local well water—a contaminated source high in TDS—SAMCO designed and manufactured a nanofiltration (NF) system to replace the customer's aging lime softening process and a demineralization system with single-pass reverse osmosis (RO) system using seawater membranes for high purity to replace their separate-bed and mixed-bed demineralization system.

The design split the water stream to feed equally into two systems so production is uninterrupted during cleaning and maintenance.

### TECHNOLOGY

SAMCO's project deliverables and equipment included:

- Nanofiltration system
- Single-pass RO system with seawater membranes
- Chemical feed skids
- Central clean-in-place skid
- Integrated PLC controls with central control system

## OVERVIEW

**Industry**  
Chemical

**Location**  
Illinois

**Objective**  
Reduce TDS to extremely low levels for process and boiler makeup water

**Solution**  
2 X 150 GPM:  
Nanofiltration System  
Single-Pass RO System