

## CASE STUDY

# AWC Helps Ohio Municipal RO Reduce Cleaning Frequency and Improve Performance

## The Facility

A municipal potable water RO plant located in Northwest Ohio has a design capacity of 2 MGD. It receives water from brackish wells.

The raw water is initially treated by multimedia sand filters to remove particulates and precipitated iron, followed by 2 RO trains.

Potassium permanganate is injected upstream of the greensand filters as the oxidizing agent. Dechlorination is achieved with sodium bisulfite injection before feeding to the RO.

All membrane elements are Toray TMG-20D-400 with (16x7) → (8x7) train configuration. The plant operates at 78% recovery.

RO Model	Toray TMG20D-400
Membrane Type	Low Pressure Brackish Water RO
Train Configuration	16x7 → 8x7
Pre-treatment	Greensand filter



## The Problem

The Plant had long been using a competitors' polyacrylic acid based antiscalant, dosed at 4 ppm.

The plant was cleaning the system due to dramatic increases in feed pressure every 2-4 months.

Each train takes 2 days to clean, so the drain on manpower was significant. The cost for labor and chemicals was considerable with the frequent cleanings.

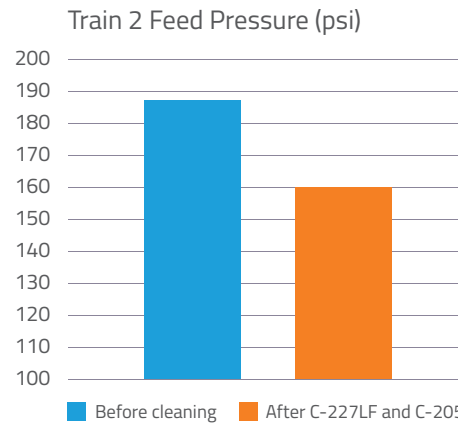
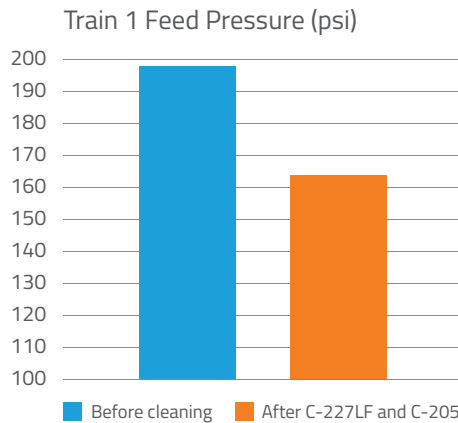
## The Solution

American Water Chemicals (AWC) performed a water analysis, and after running Proton® Software projection, determined that scaling could be controlled using 2 ppm of AWC A-102 Ultra.

AWC recommended AWC C-227 LF (low foaming) high pH cleaner and AWC C-205 low pH cleaner to remove the organics, biofilm, and carbonate scales. With the guidance of AWC on-site technical support, the operators cleaned the membranes with a 2% solution of each chemical.

The result of the cleaning was a significant reduction in feedwater pressure. After cleaning, RO train #1 exhibited a feed pressure reduction of 35 psi, while RO train #2 presented a feed pressure reduction of 28 psi.

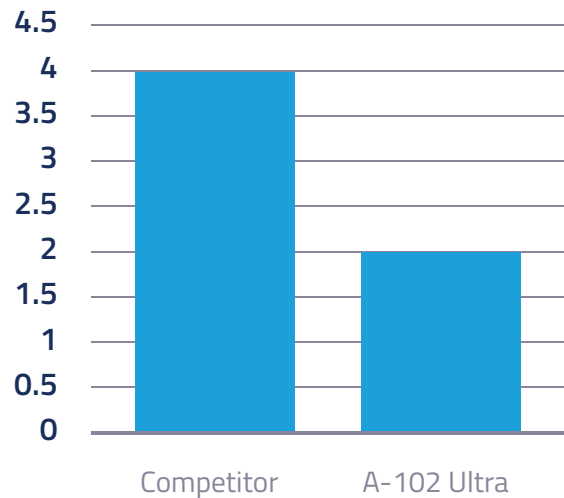
With AWC cleaning chemicals, the system was operated for 6 months before needing cleaning. Similar results were experienced during this second membrane cleaning.



## The Results

The plant has now been operating for 1 year with AWC® A-102 Ultra antiscalant. The antiscalant dosage is half of the competitive product that was in use, reducing the antiscalant cost by 50%. While also using AWC cleaners and following the AWC cleaning protocol, the cleaning frequency has gone from every 2-4 months to every 6 months, reducing the operating cost and the burden on the WTP personnel.

## Antiscalant Dosage (ppm)



## About AWC®

AWC is a solutions provider for the water treatment industry. The company offers an extensive portfolio of membrane chemicals specifically targeted to the needs of its global clients. Some of these chemicals include antiscalants and cleaning chemicals for Reverse Osmosis (RO), Nanofiltration (NF), Ultrafiltration (UF) and Microfiltration (MF). In addition, the company provides a broad range of analytical services including membrane performance testing, cleaning studies and membrane autopsies. The company's service offerings complement the chemical product line and offer unique tools for identifying the exact nature of a scale or foulant. Lab scale simulations are conducted to insure successful scale inhibition and optimal performance of RO/NF membrane systems during full scale operation or piloting.