

## RECORDED BENEFITS

- \$32,400 reduction in treatment costs
- Saved 35-man days per year in cleaning labor
- Conserved 600,000 gallons of water annually

## Ethanol Refinery Saves Costs While Optimizing RO Performance

### Ameroyal™ 710 Antiscalant

#### Customer Challenge

A grain processing plant located in North America operates a powerhouse that produces 150 psig process steam. High purity makeup water is provided by two 100 gpm reverse osmosis (RO) units. Analysis of the feed water to the RO units showed elevated levels of barium and aluminum due to variations in the water plant operation resulting in mineral scaling in the second stage areas. Organic debris was also causing microbiological fouling in the first stages. Normalized permeate flow was reduced, the quality of the permeate was deteriorating and increased pressure drop showed that fouling was occurring throughout the unit.

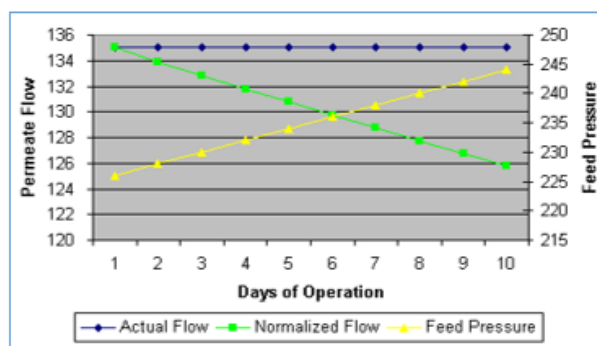
Following replacement, the membranes required cleaning every four days to maintain proper pressure ratios and permeate flow. Cleaning involved a rigorous four-step process including alkaline and acid washes to remove the foulants. Since these cleaning procedures normally required three hours of operator time, the plant approached Solenis seeking assistance in solving the problem.

#### Recommended Solution

The incumbent antiscalant was replaced with Ameroyal 710 antiscalant, a superior blend of deposit control agents specifically designed to control mineral scales such as calcium carbonate, barium sulfate, iron, as well as calcium and magnesium silicates. The product is also formulated to prevent aluminum fouling which the previous antiscalant was incapable of controlling.

#### Results Achieved

The system was thoroughly cleaned and brought back into service and remained in service for 62 days before being taken off-line for cleaning. This represented a 1450% increase in the time between cleanings versus the prior antiscalant. This resulted in savings for labor, chemical and water costs and membrane life extension. The adoption of the Ameroyal 710 antiscalant dramatically improved the RO performance, reliability and operating costs at the plant. The plant saved \$32,400 per year, gained 35-man days and was credited for conserving a natural resource; over 600,000 gallons of water per year.



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