

Reducing Foaming Issues in Municipal Wastewater Ultrafiltration System



BACKGROUND

A Midwest oil refinery utilizes 100% municipal wastewater (also known as grey water) for the plant's cooling towers and boiler water makeup. The makeup contains high levels of organics, microbiological activity, and conductivity.

As the wastewater enters the plant, it first passes through a 10-micron mechanical filter, then to dual ultraviolet (UV) units. This stream is then forwarded to the cooling towers and an open tank submersible ultrafilter (UF), which feeds the reverse osmosis systems for boiler water makeup.

The air scouring effect on the outside of the submersible UF lumens causes significant foaming, leading to hazardous slippery conditions.



SOLUTION

ChemTreat conducted two defoaming tests to determine the ideal dosage for reducing foaming over an extended period:

1. Direct spray on existing foam from the system to determine foam suppression capability
2. Jet spray foam generation to determine foam prevention

ChemTreat's FO180 defoamer was selected because of its ability to quickly suppress foam without affecting the flux rate of the UF's permeation.

FO180 was found to be most efficient when diluted and sprayed over the surface of the UF tank, providing both chemical and mechanical foam control.



RESULTS



BEFORE: Excessive foaming at the pretreatment plant



AFTER: FO180 application reduced foaming significantly

The periodic spray of **FO180** defoamer at 10 ppm significantly reduced foaming and continuously kept it down. The customer now sprays FO180 over the surface of the UF twice per day to control foaming issues.