RO Lab Capabilities

ASHLAND, VIRGINIA

ChemTreat's state-of-the-art reverse osmosis lab located in Ashland, Virginia provides a complete array of laboratory services to improve membrane performance and develop new formulations for specific applications.

Product Development & Performance Test

ChemTreat's RO lab has the capability for new product development and performance test for both antiscalant and cleaners. Bottle test and cross-flow test are used to verify the efficacy of antiscalants in inhibiting and/or reducing scaling on membrane surfaces.

Membrane Autopsy

Chemical, physical, and micro-biological analyses determine the type of foulant present in the membrane. Results from autopsy are used to troubleshoot the system and recommend the most effective pretreatment and cleaning chemicals to improve system performance and increase membrane life.

RO Cleaning Study

Fouled membrane samples are tested on a laboratory cross-flow unit to identify the best cleaners and procedures to address fouling on membranes. The RO cleaning study can also provide an opportunity to custom blend and test chemistries for site-specific foulant.

8-inch Element Testing & Cleaning

ChemTreat's RO lab has the capability of testing and cleaning an 8-inch single element to validate the effectiveness of a cleaning protocol.

Microbiological Analysis

Water and deposit sample analysis include total aerobic bacteria, total fungi, sulfate reducing bacteria, slime forming bacteria, pseudomonas, enterobacteriaceae, and more.

ChemTreat membrane autopsy capabilities include unbiased, expert evaluation and inspection of membranes to identify the causes of membrane failure in microfiltration (MF), ultrafiltration (UF), nanofiltration (NF), and reverse osmosis (RO) membranes. Membrane autopsies include the physical dissection of a membrane element or module, in-depth analytical testing, results interpretation, reporting, and recommendations.

Exterior Inspection

Exterior inspection of membrane elements examines for:

- Physical damage or defects in O-rings and brine seals
- Anti-telescoping device (ATD) for channeling and colloidal debris
- Feed spacer location as an indication of fouling

Internal Inspection

This is a destructive technique to examine the inside of the membrane. The key is to identify the foulant, then take the proper steps to treat the cause. Envelopes and feed spacers are inspected for the extent and pattern of fouling, channeling, and ungluing.

Deposit Analysis

During the internal inspection, foulant(s) sample are collected for analyses. Loss-on-ignition (LOI) determines the amount of organic versus inorganic material in the sample. X-ray fluorescence (XRF) is used to identify the inorganic material remaining following the LOI. Scanning Electron Microscopy (SEM) with Energy Dispersive X-Ray Analysis (EDX) is used to provide photographs of the foulant layer and elemental identification. Fourier Transform Infrared Spectroscopy (FTIR) can be used to further analyze organic material. Once a sample is scanned, it is matched to a vast library to determine its composition.

Microbiological Analysis

This analysis determines the sample's biological activity, including the total bacteria count (TBC), slime-forming bacteria, sulfate-reducing bacteria, and iron-related bacteria, etc. The diversity of a biofilm can be a good indication of its maturity

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Cell Test and Cleaning Study

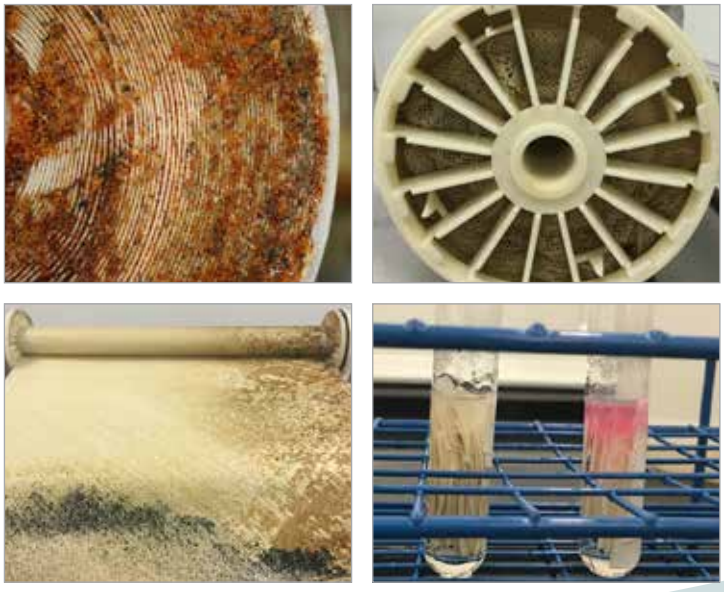
Cell testing determines the performance of removed membrane samples based on the RO manufacturer's standard test condition. It is also useful in optimizing membrane cleaning procedures to improve overall element performance.

Fujiwara Test

This test determines whether the membrane surface has been exposed to an oxidizing halogen, such as chlorine or bromine.

Dye Test

A dye test is performed to detect any physical defects or membrane surface deterioration. Areas of damage allow the dye to soak through to the permeate side of the membrane.



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