

Southwest Membrane Operator Association

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SWMOA NEWSLETTER - SPRING 2008

MEMBERSHIP UPDATE

As of June 1, 2008 we are 249 members strong and growing rapidly! SWMOA members should have received a CD with the membership list.

EVENT ACTIVITIES Annual Symposium in San Diego

SWMOA's **First Annual Symposium** "Membranes on the Move" was held in February at the Kona Kai Resort in San Diego. Attendance was good with 127 people at the symposium. Attendees received 20 Contact Hours for CA Water and 2.0 Education Points for CA Wastewater. The program included technical sessions and hands-on training over three days covering a wide range of subjects. Feedback from the attendees was very positive. Over 30 companies and agencies provided speakers for the symposium – thank you!

During the Symposium, SWMOA gave its first annual awards:

Membrane Plant Award - Olivenhain David C. McCollom Water Treatment Plant accepted by
David Smith

Membrane Plant Operator Award - Jim Dickerson, Sweetwater Authority

Congratulations to both!

Workshop in Alameda

A Hands-On Reverse Osmosis Plant Operator **Training Workshop** was held on May 29th at the Alameda County Water District in Northern California. We had a full house with 37 attendees. A big Thank You to the Alameda County Water District, especially Luisa Sangines and Douglas Chun, for hosting this event and all of their planning and dedication to make this truly a fantastic workshop for SWMOA.

Upcoming Workshops

OLIVENHAIN, CA

The next SWMOA workshop will be held on **Thursday, August 14, 2008** at the Olivenhain Water District in Olivenhain, CA. This will be Hands-On Membrane Plant Operator Training. A special "thanks" goes to the Olivenhain Water District for their support hosting this upcoming workshop. An email will be sent out very soon on the full workshop program as well as how to register for this workshop.

YUCAIPA, CA

We will also have an **October 16, 2008** workshop at the Yucaipa Valley Water District in Yucaipa, CA for Hands-On Membrane Plant Operator Training. A flyer will be ready within the next few weeks with the full details of this workshop.

BEVERLY HILLS, CA

Our last workshop for the year will be held on **December 3, 2008** at the Beverly Hills Water District in Beverly Hills, CA – this will be an RO Membrane Cleaning Workshop. You will not want to miss this Hands-On Training of an actual Membrane Cleaning. Details will be available soon on this workshop.

All SWMOA workshops have CEU credits for water and wastewater operators.

Please visit our SWMOA website for flyers and online registration information. The online registrations for each of these workshops will be available soon – www.swmoa.org for details or call SWMOA at 888-463-0830.

Operator Tip: Data Normalization and Modern Membranes

Normalization has always been a necessary tool for monitoring the condition of reverse osmosis treatment systems. With modern high performance membranes, normalized data has become even more important.

In the “old days” when a net applied pressure (feed pressure minus osmotic pressure, differential pressure and permeate back pressure) was typically 300 to 400 psi, all elements in a train produced essentially the same permeate flow because differential pressure and changes in osmotic pressure were insignificant compared to net pressure. The standard ten percent allowable loss of normalized permeate flow represented a fouling pressure loss of 30 psi. With softening or nanofiltration membrane, 30 psi could represent as much as half the net applied pressure, an unacceptable loss of performance.

Differential pressure (pressure loss on the feed side of the membrane) is also much more significant in today’s membrane elements. Early designs produced an essentially constant but increasing “per element” recovery from feed to concentrate. In a current design, with low pressure membrane, eight element pressure vessels and 2 – 1 staging, recovery in the first element of the first stage can be as high as four times that in the last element of the second stage. In a typical second stage, recovery within individual elements remains constant or decreases as lower feed pressure produces lower permeate flow. “Per element” recovery is important because of its influence on particle fouling. In a membrane element, water flows in two directions, from feed to concentrate and toward and through the membrane surface. The flow of water through the membrane surface carries dissolved salts and suspended solids. Turbulence induced by the feed side spacer returns suspended solids and rejected salts back into the bulk flow. The ratio of these two flows (recovery within the element) influences the rate of deposition of suspended solids.

Since permeate flow per element and recovery per element are significantly different between first and second stages, we can no longer assume that fouling and scaling rates are the same throughout a system. Data collection and normalization should therefore monitor each stage separately. Particulate fouling can occur more rapidly in upstream elements while scaling continues to occur in downstream elements.

Membrane manufacturers and equipment manufacturers offer any number of normalization programs for computer use. Calculations are frequently built into computer based control systems. Regardless of the source or the calculation methods, regular data collection and normalization keep the plant manager ahead of membrane fouling problems.

Operator tip provided by Carl Hickman, Snowflake Pure Water

SPREAD THE WORD

Let your friends at other water districts know about SWMOA - the Association that is dedicated to providing a forum for membrane system operators to exchange information, experience and knowledge. As important, SWMOA provides educational credits through our workshops and hands-on training necessary for Operator Certification. Our goal is to make our vital industry stronger and the technology more reliable. Prospective members can find application information online on our website at www.swmoa.org.

SWMOA was formed in 2006 as an affiliate of the American Membrane Technology Association (AMTA). It is dedicated to the improvement of the quality of water supplies through desalting, reuse and other water sciences. SWMOA's members are concerned with design, research and development, equipment manufacture, operation and maintenance, environmental regulations and legislation.

SWMOA's objectives include promotion, both to the public and to elected officials, of available technologies that improve water quality; education, training and certification of plant operation personnel; communication within the membership; development of meaningful interface with regulatory agencies; technology transfer; and protection of the environment.

SWMOA is committed to the advancement of its objectives throughout the Southwest United States region including but not limited to Arizona, California, Hawaii, and Nevada within the limits of it's resources.

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