



European Desalination Society

One-day Seminar

May 11, 2014

**How to Correct the Biggest
BWRO & SWRO Problems**

Lecturer David H. Paul

In conjunction with the conference on

Desalination and Water Treatment

May 11–14, 2014, Grand Resort Hotel, Limassol, Cyprus

How To Correct The Biggest BWRO & SWRO Problems

1-Day Seminar

Information Packet

Seminar Cost - € 375.00

Seminar Length – 8 hours

Seminar Description

The reverse osmosis (RO) technology has been utilized for seawater and brackish water industrial and drinking water applications since the 1970s. You'd think all the problems would have been solved by now...Right?...Wrong!

Both seawater and brackish water RO systems, particularly those operating on surface water sources, still may have SEVERE problems that cost a lot of money. These are common problems that everyone involved with RO systems should know.

What is taught are the common problems that occur and the effective ways to solve these problems. The information is based upon the instructor's 36 years of operating, managing, training and consulting experience at hundreds of plants.

The information provided is practical and immediately usable to improve the performance of existing and future plants. The presentation covers the three most common problems in each of the following areas:

- Pretreatment
- RO Unit Design
- RO Unit Operation
- RO Unit Monitoring
- RO Unit Chemical Cleaning

The author/presenter is a professional trainer as well as a professional RO membrane system consultant and will ensure that the presentation is well paced, interesting, understandable and valuable. The presentation will quickly illustrate the main points using Power Point™ slides, photographs, video clips, illustrations and animations to provide an enjoyable as well as an educational experience.

For each of the problems and solutions, enough introductory material will be presented so that when more advanced concepts are covered, attendees will thoroughly understand the advanced concepts.

Who Should Attend

The following personnel will find this information extremely valuable:

- Operators
- Plant engineers
- Design engineers
- Original Equipment Manufacturers
- Service technicians
- Anyone that deals with RO units

Why You Should Attend

- You can't get this information anywhere else
- The instructor has been in over 500 plants since 1988
- The instructor is a professional trainer
- The seminar covers the material in a step-by-step manner so that everyone will understand the concepts presented
- The presentation uses a multimedia format, with several videos and animations provided

What You'll Receive

- 8 hours of enjoyable, interesting, easy-to-understand training
- A highly illustrated workbook
- Break Refreshments
- Personal attention: questions & comments are encouraged
- A certificate of completion

Instructor Biography

Your instructor will be the following



David Paul
David H. Paul, Inc.
President/Instructor/Consultant

David Paul is the President of David H. Paul, Inc. (DHP), an advanced water treatment training and consulting firm located in the USA. He has been involved in many aspects of RO water treatment since 1977. He was an operator 2.5 years, a shift supervisor for 1 year and the manager of a \$500 million USD (today's value) huge water treatment plant that included reverse osmosis. He founded DHP in 1988. Since then he has provided training and consulting services at BWRO and SWRO plants around the world. He is the author of over 160 published articles and several books on membrane water treatment.

Certificate of Completion

Each attendee will receive a DHP certificate of completion following the course.

DHP Training Seminars

DHP has trained over 18,000 water treatment professionals worldwide since 1988. Trainees include industrial, governmental and drinking water clients. The average rating given by attendees for all DHP seminars, including this one, is over 9 (on a scale of 1-10, with 1 being a terrible rating and 10 being an outstanding rating).

Testimonials

The following are typical comments from attendees of DHP Seminars:

"Easy to understand!"

Yokiko Ichige - Engineer - Hitachi (Japan)

"Both the material and workshops were perfect!"

Ibrahim Bukusoglu – Area Sales Manager - Burkert (Germany)

"Excellent! Lots of information. Easy to understand."

Jimmy Statia - Operator, WEB Aruba (Caribbean)

"Excellent! More than I expected."

Mark Hall - Director - Water Development Board (USA)

"Course was full of useful information related to my job."

Jukla Permila – Technician - Kemira (Finland)

"Great Course!"

Kirk McNaughton – Senior Chemist - Verve Energy (Australia)

"Excellent and extremely relevant training from a very enthusiastic and engaging instructor"

James Lomax – Process Engineer - BP (England)

"Excellent Instruction!"

Dennis Frey – Manager, District Operations – Saskwater (Canada)

How to Correct the Biggest BWRO & SWRO Problems

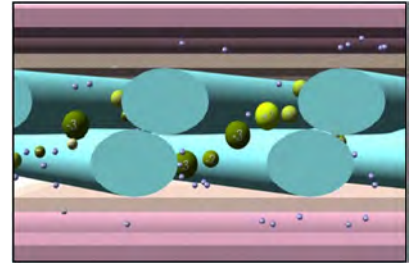
1-2 breaks in the morning, lunch break, 1-2 breaks in the afternoon
 Agenda timing is approximate

Hour 1

Introductions
 RO water treatment
 Water contaminants

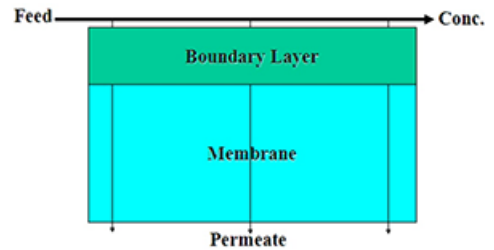
Hour 2

Semipermeable membranes
 Osmosis & reverse osmosis
 Membranes and membrane elements



Hour 3

Pressure vessels
 Staging
 RO units
 RO operation



Hour 4

Potential problems
 Pretreatment to minimize problems

Hour 5

The 3 biggest pretreatment problems and how to correct

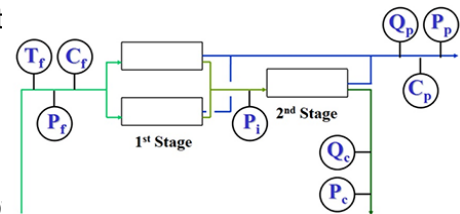
1. Chlorination/dechlorination
2. Lack of MMF attention
3. Overfeeding sulfite



Hour 6

The 3 biggest RO unit design problems and how to correct

1. Overall water flux
2. First element water flux
3. Low crossflow rates



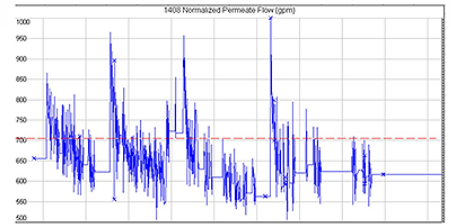
The 3 biggest RO unit operation problems and how to correct

1. Over capacity-Intermittent operation
2. Variable flow rates
3. Overcapacity

Hour 7

The 3 biggest RO unit monitoring problems and how to correct

1. Not trending performance weekly
2. No DP monitoring across each stage
3. Instrument calibration



Hour 8

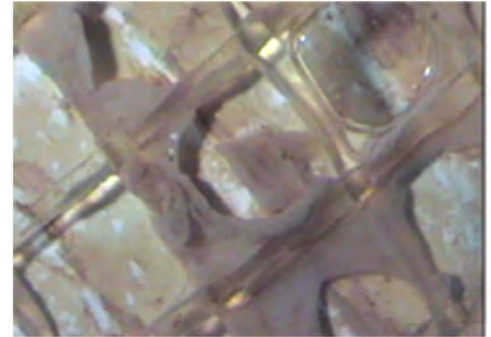
The 3 biggest RO unit chemical cleaning problems and how to correct

1. Waiting too long to clean
2. Inadequate cleaning pump
3. Not cleaning back to new/near new performance

Final questions & answers

Seminar evaluation

End





David H. Paul, Inc.
 1911 Rustic Place
 Farmington, NM 87401
 United States of America



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How To Correct The Biggest BWRO & SWRO Problems
1-day seminar

REGISTRATION FORM

Surname _____ First name _____

Address _____

Country _____ Telephone _____

Fax _____ E-mail _____

Registration fee: €375

Payment can be made by:

Credit card

Bank Transfer to be sent to the address below and a copy emailed to us

Visa Mastercard

For other cards please contact us

Please take care of your own bank charges

Card N° _____

Account Name *European Desalination Society*

Exp. date _____

Account No. 11863.19

Banca Monte dei Paschi di Siena

Cardholder name _____

67100 L'Aquila, Italy

ABI: 01030 CAB: 03600

Signature _____

Swift code: PASCITMMAQU

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Please fill in the form and fax to: Fax +1 928 543 3066
or send as an attachment to: balabanmiriam@gmail.com