



# Operation, Control, Monitoring & Maintenance of RO Systems

**Classroom & Hands-On Training**

Or

**Online Training**



## Information Packet

### Seminar Cost

- \$3,999 USD
  - Price includes
    - Classroom & hands-on training
    - IDA Certificate
    - Certification administration (if you're taking this seminar for certification)
    - Equipment usage
    - Analytical equipment, lab ware, chemicals, etc.
    - Small class size
      - Limited to 8 attendees
      - One-on-one attention
    - Unbiased training
      - DHP/IDA don't sell chemicals or equipment
  - Discounts may apply
    - "Early Bird" (10% 30 days prior, 15% 45 days prior) for scheduled regional seminars
    - Other

### Seminar Length

- Three days
- 9 hours per day (8 a.m. to 5:00 p.m.)
  - Four 10-15 minute breaks during the day
  - 30-45 minutes for lunch

### Seminar Description

This seminar consists of three days of classroom and hands-on training covering proper operation, control, monitoring and troubleshooting of RO systems. This is essential information for anyone who works with, designs, services, installs, operates, maintains and/or troubleshoots RO systems.

This is a Level 2 seminar. While some Level 1 information is provided as a review, all topics are taken to a higher level in this seminar.

During this seminar you will learn how to effectively:

- Evaluate the pretreatment
- Understand the operation of an RO unit
- Load/unload membrane elements
- Monitor an RO unit
- Troubleshoot an RO unit

### Online Training Cost

- \$3,270 USD
  - Price includes
    - Narration
    - Many illustrations
      - Video clips
      - Animations
      - Pictures
    - Interactive questions
    - Certification Exams
    - Workshops
    - Proficiency Assignments
      - Access to DHP Instructors
    - Unbiased training
      - DHP doesn't sell chemicals or equipment
  - Discounts may apply
    - Bundled discount for RO Certification
    - Multiple-course discount
    - Multiple-trainee discount
    - From time to time DHP runs special discounts

### Length

- 24+ Hours

### Description

This online training consists of three lectures, workshops, exams and proficiency assignments covering proper operation, control, monitoring and troubleshooting of RO systems. This is essential information for anyone who works with, designs, services, installs, operates, maintains and/or troubleshoots RO systems.

This is a Level 2 training. While some Level 1 information is provided as a review, all topics are taken to a higher level in this training.

During this training you will learn how to effectively:

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**Classroom and hands-on topics include:**

- RO Water Treatment Overview
- Water Contaminants Overview
- Semipermeable Membranes
- Membrane Rejection
- Osmosis & Reverse Osmosis
  - Osmotic pressure
  - Applied pressure
  - Net Driving Pressure
  - Water flux
  - Salt passage
- Membrane Elements
- Pressure Vessels
- RO Units
- RO Unit Operation
- Recovery rate
- Concentration factor
- What happens from first inch/cm to the last in RO units
- Potential Problems
- Pretreatment
  - Scaling Control
  - Fouling Control
  - Chemical Attack Control
- Daily Monitoring
- Weekly Trending
  - Normalized Permeate Flow
  - Pressure drops
  - Normalized Salt Passage
- Piping and Instrumentation of RO Systems
- Silt Density Index (SDI) measurements
- Unloading & loading elements
- RO Unit Monitoring
- RO Unit Trending
- Obtain analytical data and check the calibration of on-line instruments
- Profiling
- Probing



## **DHP's Training Methodology**

DHP uses the consulting services of a Doctor of Education from Columbia University (Dr. Linda Paul) in the development of its training seminars. DHP's training methodology includes:

- Short, interesting, interactive lecture sessions using:
  - Power Point™ slides
  - Video clips
  - Animations
- Group exercises to enhance understanding and retention
- Workshops to further enhance understanding and retention
- Optional daily open-book Knowledge Verification Exam to document what was learned

## **Benefits of Online Training**

The benefits of taking this online training are great.

- You are trained by David H. Paul, Inc. the #1 Reverse Osmosis Water Treatment Trainer in the world
- There is no need to travel
- \$1,700 - \$2,000+ savings over the ROS-II hands-on training
  - Online training is \$426 less than the HO seminar
  - Air travel averages about \$600
  - Hotel averages about \$400
  - Car rentals average about \$200
  - Meals average about \$136
  - There could be other costs as well
- No Covid-19 limitations
- Begin Courses Immediately
- Work at you own pace
- Train with your own equipment
- You can always go back to the training as a reference even after completion

## Who Should Do This Training

Everyone who works with, or will work with, the reverse osmosis and pretreatment technologies in operating plants needs to know the tips, techniques and proficiencies taught in this seminar, including:

- Operators
- Maintenance personnel
- I & C Technicians
- Supervisors/Managers
- Engineers
- Original Equipment Manufacturers
- Service technicians
- More

## Why You Should Attend

### From a Personal Standpoint

- After successfully completing this 3-day program **you will be in the top 1% of RO personnel in the world** in your level of understanding and proficiency
- If desired, you can add **Reverse Osmosis Specialist II** to your title and bio
- Puts you in a better position for job advancement
- You can't get this information anywhere else
- The instructor has decades of practical RO water treatment experience
- The instructor is an RO water treatment consultant
- 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 many videos and animations provided



### **From an Employer's Standpoint**

- Trained employees save you money by:
  - Having the knowledge needed to identify problems at an early stage
  - Having the ability to troubleshoot even difficult problems many RO systems face
  - Using this knowledge to correct problems
  - Less down time of the RO system
  - Increased system reliability
- Being able to show clients, customers and any applicable governmental agencies that your employees have been independently certified on their knowledge and proficiencies

### **What You'll Receive**

- 24 hours of interesting, easy-to-understand training
- Highly illustrated workbook
- Break refreshments and lunch
- Personal attention: Questions & Comments are encouraged

## Instructor Biography



**Dick Youmans, BBA, CWT, ROS IV**  
Director of Sales & Certification  
Instructor/Consultant

**Richard (Dick) Youmans** is an instructor/consultant and the Director of Sales & Certification for David H. Paul, Inc. (DHP). Since 1977, Dick has been involved in just about every aspect of industrial water treatment with most of those years specializing in reverse osmosis chemical applications, training and troubleshooting. Like all DHP instructor-consultants, he has been in hundreds of water treatment plants covering every major industry. Dick earned a BBA degree from the University of Georgia in 1974 and an Associate of Applied Science Degree in Industrial Water Treatment from San Juan College and David H. Paul, Inc. in 2002.



**Steve Siverns, ROS IV**  
Instructor / Consultant

**Steve Siverns** is an instructor and consultant for David H. Paul Inc. (DHP). Steve has over 35 years' experience focused on designing and troubleshooting water treatment processes. He specializes in high purity industrial water treatment and has experience with desalination, water recovery, and waste treatment. Steve is a Professional Engineer (P.Eng.) registered in the province of Ontario, Canada. He received his B.Eng. (1980) and M. Eng. (1984) in Chemical Engineering both from McMaster University.



## Certificate of Completion

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

## DHP Training Seminars

DHP has trained **over 20,000 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:

I learned a lot and recommend this course. Trainer kept it interesting and wet.

**Kevin Haines**

Very educational

**Thomas Boachie**

Material was very interesting, well explained and presented... Easily relatable to our daily operations.

**Antoine Gagne**

Very informative. Hands on activities are well organized.

**Xunyi Pan**

Great instructor, great information, great hands-on experience!

**Mindy Obert**

Excellent

**SHAUN WILLETO**

Very well organized...

**Martha Owino**

Great experience with hands on operating & analyzing metrics... Brought clarity to abstract topics.

**Ryan Barelli**

Course was well run with a very knowledgeable instructor.

**Michael Mayall**

Excellent Training. Every step of the R.O process was covered in an in depth manner & made basic enough to

understand.

**Brent Like**