

MIXED-BED ION EXCHANGE REGENERATION & TROUBLESHOOTING



Courtesy: Puretec Industrial Water

This is the first ever ion exchange mixed-bed regeneration hands-on training program that David H. Paul, Inc. (DHP) has offered and the first one anywhere of which DHP is aware. This is a unique and fantastic opportunity for many reasons, but especially due to the location of the training.

The training is being held at Puretec Industrial Water's (Puretec's) ion exchange regeneration facility. Every day they regenerate thousands of cubic feet of various ion exchange resins from 1.6 ft³ bottles to 45 ft³ vessels. The exhausted resins come from hundreds of softening and high purity applications and include all resin types.

Some resins are regenerated in their original bottles and vessels. Many resins are transferred to numerous 65-230 ft³ vessels for regeneration then sluiced back into the original bottles/vessels.

The mixed resins that are to be regenerated by out-of-vessel are first sluiced into large separator vessels, where the cation resin is "caustic killed" to aid in bead separation. A proper backwash step then separates the beads nearly perfectly. The anion and cation exchange beads are then sluiced to separate vessels for regeneration. The Single-Bed Ion Exchange Regeneration & Troubleshooting Hands-On seminar presented the previous day covers all the details of single-bed regenerations. Once regenerated the beads are sluiced into a remix vessel, mixed thoroughly and then rinsed to quality before being sluiced back into the bottles/vessels.

Not only do you get to see a fantastic regeneration operation, you also get to observe, monitor and troubleshoot several regenerations in a single day. You'll also receive troubleshooting training from people that do this for a living!

Who Should Attend

This seminar provides valuable, practical knowledge to anyone wanting to understand the most important features of good single-bed regenerations, including:

- Plant engineers
- Service technicians
- Plant Supervisors or Managers
- Operating & Maintenance Personnel

Why You Should Attend

This is a fantastic opportunity to be trained at an ion exchange regeneration plant and receive training from DHP and Puretec professionals. At the Puretec plant, where this training occurs, Puretec professionals regenerate hundreds of thousands of cubic feet of resin every year. DHP is not aware of any other place in the world where you can obtain this type and quality of training. DHP's success since 1988 is based on unique experience and training capabilities using a step-by-step multimedia and hearing/seeing/doing approach. This allows DHP to excellently train essentially anyone in today's high-tech water treatment technologies. Only practical information, tips and techniques are taught.

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REGISTER AT

www.dhpseminars.com

MIXED-BED ION EXCHANGE REGENERATION & TROUBLESHOOTING

What You'll Receive

- 8 hours of interesting, step-by-step, easy-to-understand, practical Hands-On regeneration training
- Highly illustrated workbook
- Break refreshments and lunch

Instructors



David Paul has provided consulting services at several SWRO plants around the world including at the Tampa Bay Desal Plant in the United States. He is the author of over 150 published articles on membrane water treatment, has developed and administers a 4,000 page correspondence training program on advanced water treatment, and has created and administers on-campus Associate Degree in Advanced Water Treatment programs at four different locations in the United States. David is the President of David H. Paul, Inc. (DHP), an advanced water treatment training and consulting firm located in the USA. DHP has trained over 16,000 water treatment professionals worldwide since 1988.



Bill Dees provides water treatment training and consulting services for David H. Paul, Inc. (DHP). He has over 18 years of design, installation, operation, maintenance, troubleshooting, training and consulting experience of water treatment systems including membrane, ion exchange, pretreatment and post-treatment equipment. Bill is also the Technical Services Manager for DHP, responsible for membrane module autopsies and consulting. Bill holds an Associate of Applied Science Degree in Industrial Water Treatment from San Juan College, DHP's first on-campus, college degree program.

Certificate of Completion

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

What Others Say About DHP Training Seminars

DHP has trained over 16,000 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).

The following are typical comments from attendees of DHP Seminars:

“Great Course! Well worth the time.”

Bob Castle - Water Quality Manager, Marin Municipal Water District

“Excellent training materials and presentation.”

Gary Trent - Abbott Laboratories

“Excellent... got what I was interested in and more, especially in the inner workings of UF.”

Eric Lozano - Austin Energy

“Well presented and well worth the investment.”

John Countz - Operations Manager, Consolidated Water Co.

“Excellent! More than I expected.”

Mark Hall - Texas Water Development Board

“It was great!”

Trent Hughes - Civil Engineer, Black & Veatch

“Great Course.”

Joe Gonzales - Xcel Energy

“Most Excellent!”

Mike Milner - Alternative H2O Solution

MIXED-BED ION EXCHANGE REGENERATION & TROUBLESHOOTING

Detailed Agendum

7:45 Refreshments

8:00 Introductions (Classroom)

- Mixed-Bed Overview
- Mixed-Bed Regeneration Overview
 - In-Vessel Steps
 - Out-of-Vessel Steps
 - Caustic kill
 - What to monitor

9:00 Break

9:15 P & ID Overview (Classroom)

Puretec's Out-of-Vessel P & IDs

- Separator
 - SBA single-bed regeneration
- #### Mixed-Bed Regenerationb (Hands-On)
- Loading separator
 - Caustic kill
 - Regenerant injection
 - % salt strength
 - Flow & Time
 - Resin separation
 - Temperature
 - Flow & Time
 - Separation line evaluation
 - Resin transfer
 - SAC & SBA regenerations (see below)
 - Remix
 - Air flow & time
 - Rinse to quality
 - Flow & time
 - Silica
 - Conductivity/Resistivity

10:15 Break

10:30 SBA Regeneration (Hands-On)

- Backwash
 - Flow
 - Bed level
- Regenerant injection
 - Caustic strength-specific gravity
 - Temperature
 - Flow & Time
- Slow Rinse
 - Flow & time
 - Conductivity/resistivity
- Fast Rinse
 - Flow & time
 - Total hardness
 - Conductivity/resistivity

11:30 Lunch Break

12:30 Separator P & ID (Hands-On)

- SBA Vessel P & ID
- Remix Vessel P & ID
 - Identify every valve, instrument and line
 - Identify valve arrangement during

Normal Service and Regeneration

1:45 Break

2:00 Highest Purity Regenerations for the Biopharm and Microelectronics industries

- Funnel regeneration (Hands-On)
 - See picture of funnels below
 - Clear funnels so you see the entire process

3:00 Break

3:15 Ion Exchange Conclusions (Classroom)

- Overview
- Results of today
- Troubleshooting regenerations with Puretec professionals

4:20 Summary & Conclusions

- Final Questions & Answers
- Seminar evaluation

5:00 End



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