

Pharmaceutical
Microelectronics

RO/ EDI *High Purity Water Seminar*



The EDI Seminar is designed for:

- ⇒ Engineering Firms
- ⇒ Operations Managers
- ⇒ Utilities Personnel
- ⇒ Facilities Managers
- ⇒ Technicians
- ⇒ Project Managers
- ⇒ Purification Specialists
- ⇒ Water Specialists

Singapore

Two-day Seminar
Singapore Water Hub
March 28 - 29

- ▶ Join industry experts of Water Purification Systems for a two day Seminar, exploring RO/ EDI Technology.
- ▶ Learn Electropurification (EP™) applications and technical requirements
- ▶ Understand current Purewater Design Practices, (cPDP)
- ▶ Discuss current Good Manufacturing Practices (cGMP) to meet USP, ITRS and global guidelines
- ▶ Manage RO-EDI life cycle costs for new and legacy designs
- ▶ Improve RO-EDI Maintenance & Troubleshooting for ALL designs
- ▶ Learn FDA issues for the industry

Approved by **Water Quality Association**
and **Association of Water Technologies**
for recertification credits.



ELECTRODEIONIZATION

Courtesy: GE Water,
Snowpure, Ionpure and
Omexell

RO/ EDI *High Purity Water*

Applied Water Solutions is an independent water purification company authorized to work on all makes and models of EDI.

Having installed some of the first EDI in the late 1980's, we have continued to contribute to the growth and development of the technology. Having more than 30 combined years of experience of water purification, **Applied Water Solutions** is known worldwide for its expertise and technology.

Today, there are more EDI offerings as the technology has developed and matured, this can make it confusing on selecting the right product. EDI has been used in pharmaceutical, semiconductor and power plant applications as well as any industry that needs high purity water.

We will present our material in an objective, unbiased, professional manner that is easy to understand.

In this training we will explain the changes and challenges in the water purification technology:

- ≈ EDI can produce some of the highest purity water; however it can also act as an instrument to detect changes in your feed water source and pretreatment.
- ≈ Design of the pretreatment and choosing the best technology for your application can reduce maintenance and cost.
- ≈ We will share some proprietary cleaning methods, autopsy an EDI stack, discuss applications, and share stories of installations and start-ups.

About the Speaker *Chris Gallagher*

Chris has over 18 years experience in managing, manufacturing and designing separation and filtration systems within a wide range of industries. In addition, Chris has substantial experience trouble shooting, upgrading, testing and maintaining all types of EDI systems.



Chris received a B.S Degree in mechanical engineering from the University of Massachusetts, and a master's degree from the McCallum Graduate School of Business in Management of Technology and Operations.

Patents

"Polarity Reversal and Double Reversal Electrodeionization Apparatus and Method", Patent # 5,736,023

Publications

"Using EDI to Meet the Needs of Pure Water Productions", IIRC, 2000

"New EDI Application: Feed from Brine Concentrator Distillate", IWC, 2001

"Electrodeionization: Revolutionary or Evolutionary Technology?", AWT, 2006

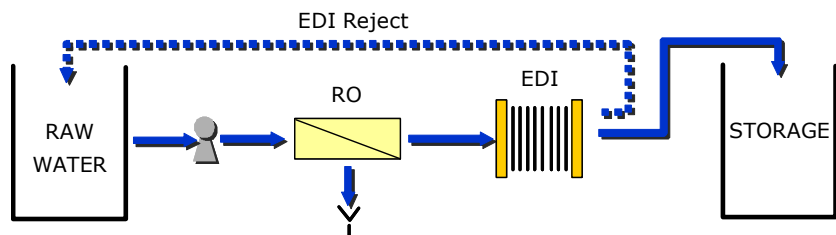
About the Speaker *Ooi Ah Lean*

Ooi has over 15 years experience in Water Treatment Businesses. Ooi has extensive experience in the engineering design, projects implementation, commissioning and operating of Ultrapure water treatment, Demin water treatment, municipal water treatment, physio-chemical wastewater treatment and biological wastewater treatment. He is well verse with latest most technology of UF, RO, EDI, Ion Exchange, UV and Ozonation.



He received a BSc (Hons) degree in Chemistry from University Kebangsaan Malaysia.

Example of RO-EDI System Design



Agenda

Day 1	
8:30 – 9:00	Registration
9:00 – 10:30	Principals of pressure membrane systems and electro purification (EDI) systems <ul style="list-style-type: none"> <i>E=IR, Current efficiency governs all EDI's</i> <i>Fundamentals that are common and not common of RO and EDI</i>
10:30 – 10:45	Coffee - Break - Networking (included)
10:45 – 12:30	Reverse Osmosis Design and EDI Pretreatment Requirements <ul style="list-style-type: none"> <i>Sizing pretreatment correctly can reduce maintenance and cost</i> <i>Proper RO Design, temperature considerations, flux rate, flow rates</i> EDI Autopsy and Workshop <ul style="list-style-type: none"> <i>We will identify components and problems that can occur inside of EDI stacks</i>
12:30 – 1:30	Lunch - Networking (included)
1:30 – 3:00	System Design I– RO/EDI <ul style="list-style-type: none"> <i>Instrumentation</i> <i>Power Supply sizing</i> <i>Flow rates, pressure, and environmental considerations</i>
3:00 – 3:15	Coffee - Break - Networking (included)
3:15 – 5:00	System Design II Trouble shooting – RO/EDI <ul style="list-style-type: none"> <i>Using EDI as a instrument to detect changes in feed source</i> <i>Cleaning methods for fouling and scaling</i> <i>Irreversible fouling of EDI's, what and when?</i>
Day 2	
8:30 – 9:00	Registration
9:00 – 10:30	<ul style="list-style-type: none"> <i>Pharmaceutical water system guidelines</i> <i>Production methods for USP and WFI Water</i> <i>WFI USP26(27) Monograph Requirements</i>
10:30 – 10:45	Coffee - Break - Networking (included)
10:45 – 12:30	<ul style="list-style-type: none"> <i>Water System upgrades to meet FDA guidelines for purified water</i>
12:30 – 1:30	Lunch - Networking (included)
1:30 – 3:00	<ul style="list-style-type: none"> <i>Semi Conductor Road Map update (ITRS)</i> <i>Production methods to meet the challenges of stricter water quality requirements</i>
3:00 – 3:15	Coffee - Break - Networking (included)
3:15 – 5:00	Pharmaceutical and Semiconductor water process differences and similarities <ul style="list-style-type: none"> <i>Bring your stories, share your experiences and challenge the speaker!</i>

EDI Considerations:

Low EDI Product Quality

Pretreatment is key to any EDI performance. Understand the root causes for low product resistivity and poor ion rejection.

Fouling Indicators

High stack electrical resistance and high pressure drop are fouling indicators. By recognizing all fouling indicators early on most EDI performance can be recovered with proper cleaning procedure.

System design and good engineering practices are important to any system. EDI leakage and oxidation of resin can irreversibly damage EDI systems if not detected early.

Electrical Failure

Improper EDI stack isolation and system grounding could lead to stray voltage and amperage leakage.

Variability in Feed Source

Changes in feed water are not uncommon. It can affect overall system performance resulting in higher maintenance costs.

USP Requirements

USP requirements are now annually updated. Many EDI Systems are in cGMP validated facilities. This requires documented preventative maintenance (PM) programs and updated standard operating procedures (SOP).

Need for Upgrade or Replace Existing EDI

The product life cycle varies among EDI suppliers. Understand the factors that will justify an EDI replacement.



REGISTER BEFORE MARCH 2nd AND SAVE!
For any questions call US: +1 781 791-7609

Cost:

**By March 2 - SGD 750 (USD 490)
per participant**

**After March 2 - SGD 870 (USD 570)
per participant**

10% Discount for more than 4 participants same company.

Cost includes:

- **Illustrated Workbook**
- **Certificate of completion (to be mailed after the event)**

Personal Information:

Company: _____

Name : _____

Title: _____

Address: _____

City, State, Country: _____ **ZIP:** _____

Phone: _____ **Fax:** _____

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Billing Address:

Check here if using the same address

Address: _____

City, State, Country: _____ **ZIP:** _____

Payment Information:

Purchase Order (Please fax with form to +1 781 791-5769)

Wire Transfer (Please contact +1 781 750-8682 for details)

Check (Please send check with form to PO Box 50, Burlington, MA, 01803, USA)

Credit Card - American Express (Fax form to +1 781-791-5769)

Card Holder: _____

Card Number: _____

Expiration date: _____

ON-SITE TRAINING AVAILABLE, CONTACT FOR MORE INFORMATION.

**Thank you! Fax to: 1(781) 791-5769 or
email form to inquiries@appliedwatersolutions.com**

Media Partners:



The Information Resource for the water Industry!



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