

Masterclass on Desalination & Exclusive Site Visit

June 24th-26th, 2021 at Singapore International Water Week



Taught by **Nikolay Voutchkov**
PE, BCEE, Water Globe Consultants, LLC, USA



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Where?



ADDRESS:
80 Toh Guan Road East
Singapore 608575

DIRECTIONS:

By Bus:

Bus-stop A - 183
Bus-stop B - 106, 963, 173

By MRT:

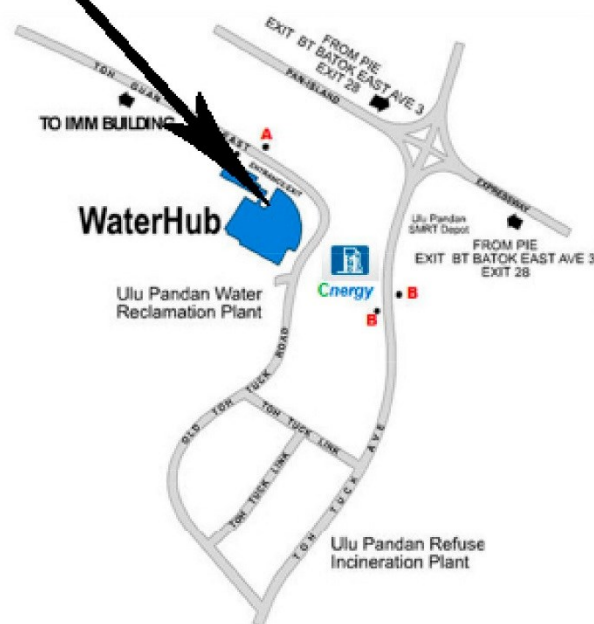
Bukit Batok MRT
- transfer to bus no. 106 or 173

Clementi MRT

- transfer to bus no. 183 or 106

Jurong East MRT

- transfer to bus no. 183





Program

Day 1: Desalination Plant Processes and Design – Nikolay Voutchkov

08:30 – 09:30 - 1.1 Desalination Plant Intakes

- Source Water Quality Issues & Considerations
- Intake Types & Configurations
- Subsurface Intakes (Wells)
- Open Ocean Intakes
- Oil Spill and HAB Impact Management Measures
- Space & Cost-saving Intake Designs

09:30 – 10:30 - 1.2 Dissolved Air Flotation Clarifiers for HAB and Oil Spill Management

- Function, Types and Configurations
- Key Planning and Design Issues
- DAF Performance During Algal Blooms

10:30 – 10:45 Coffee Break

10:45 – 12:00 – 1.3 Pretreatment Filters

- Granular Media Filtration
- Gravity Filters
- Pressure Filters
- Membrane Filtration
- Pressure-driven Membrane Filters
- Vacuum Driven Membrane Filters
- Guidelines for Selecting Pretreatment System

12:00 – 13:00 Lunch Break



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13:00 – 14:30 – 1.4 Reverse Osmosis System

- High Pressure Pumps – Type and Applications
- RO Trains – Alternative Configurations
- Alternative RO System Configurations
- Energy Recovery Systems

14:30 – 14:45 Coffee Break

14:45 – 15:45 Desalination Plant Energy Use

- Key Plant Energy Use Components & Factors
- Example of Plant Energy Use Breakdown
- Methods to Minimize Desalination Energy Use
- Alternative Sources of Energy for Desalination

15:45 – 16:30 Concentrate Disposal

- Concentrate Disposal Alternatives
- On-shore Discharges
- Open Ocean Discharges with Diffuser Systems
- Technologies for Reduction of Concentrate Volume and Beneficial Reuse
- Environmental Discharge Considerations
- Guidelines for Selecting and Designing Concentrate Disposal Systems

16:30 – 17:00 Questions and Discussions



Day 2: Operation and Maintenance of Reverse Osmosis Desalination Plants – Nikolay Voutchkov

08:30 – 09:30 - 2.1 Fundamentals of Desalination Plant Operation and Maintenance

- Key O&M Goals
- Factors Affecting Plant Performance
- Monitoring and Controlling RO System Performance

09:30 – 10:30 - 2.2 Operation and Maintenance of Intake Systems

- Subsurface Intakes
- Routine Operation
- Performance Monitoring
- Troubleshooting
- Open Intakes and Intake Pumps
- Routine Operation
- Performance Monitoring
- Troubleshooting

10:30 – 10:45 Coffee Break

10:45 – 12:00 – 2.3 Operation and Maintenance of Pretreatment Filters

- Granular Media Filters:
- Key Challenges & Solutions
- Performance Optimization
- Membrane Pretreatment Filters
- Key Challenges & Solutions
- Performance Optimization

12:00 – 13:00 Lunch Break



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13:00 – 14:30 – 2.4 SWRO System Performance Diagnostics

- Factors Affecting Plant Performance
- RO Systems Monitoring
- Common Operational Problems
- Diagnostics of RO Systems
- Membrane Autopsy

14:30 – 14:45 Coffee Break

14:45 – 15:45 SWRO Membrane Cleaning, Rotation and Replacement

- RO Membrane Clean-In-Place (CIP) System
- RO Membrane CIP Procedure
- RO Membrane Rotation
- RO Membrane Replacement

15:45 – 16:30 O&M Case Study – Fujairah SWRO Desalination Plant, UAE

- Plant Description
- Pretreatment Operations Challenges
- RO System Performance Challenges and Solutions
- Membrane Replacement Optimization

16:30 – 17:00 Questions and Discussions

Exclusive Site Visit

The IDA Academy Desalination Masterclass will conclude with a half-day site visit to one of Singapore's desalination plants on the morning of June 26, 2021. This site visit is included in registration, and provides the perfect conclusion to the Masterclass' program. For more information, contact registration@idadesal.org.



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