



WATER GLOBE CONSULTING
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BEST PRACTICES FOR SYSTEM DESIGN AND DEVELOPMENT OF TURNKEY DESALINATION PROJECTS



**October 26–27, 2017
Rome, Italy**

Lecturers Mark Wilf, PhD, Nikolay Voutchkov, PE

Day 1 – Effective approach to desalination system design

- 09:00–10:00 Desalination plants configuration and feed water sources**
Configuration of brackish RO water desalination systems
Configuration of seawater RO desalination systems
Configuration of advanced wastewater reclamation systems
Feed water supply sources and water quality
 Brackish wells
 Seawater intakes
 Tertiary effluent
Disposal of RO concentrate
- 10:00–10:45 Feed water pretreatment processes and high pressure pumping unit**
Pretreatment in RO brackish plants processing well water
Pretreatment in seawater RO plants
 Pretreatment based on media filtration
 Pretreatment based on membrane filtration
Pretreatment in wastewater reclamation plants
Management of pretreatment discharge residuals
High pressure pumping unit
 Brackish water RO plants
 Wastewater RO plants
 Seawater RO plants
Energy recovery devices
Optimization of power usage
- 10:45–11:00 Coffee break**
- 11:00–12:00 RO membranes and membrane elements**
Configuration of composite RO membranes and membrane elements
Nominal and field performance of membrane elements
Effect of process parameters on membrane performance.
Management of membrane elements inventory in RO desalination system

- 12:00–13:00 Design of RO membrane unit**
Selection of membrane elements according to application
Optimization of membrane array
Recovery rate considerations
Train size consideration
Consideration of product water demand
Design of RO membrane unit utilizing computer projection programs
Brackish water RO plants
Wastewater RO plants
Seawater RO plants
- 13:00–14:00 Lunch break**
- 14:00–15:00 Chemistry and configuration of permeate water post treatment process**
Chemistry of the post treatment process
Process and configuration of post treatment process
Brackish water RO plants
Wastewater RO plants
Seawater RO plants
- 15:00–15:15 Coffee break**
- 15:15–16:00 Examples of configuration of commercial desalination plants**
Brackish RO–NF water plants
Boca Raton, Florida
Arlington Desalter, California
Wastewater reclamation plants
GWR, Orange County, California
Bedok Plant, Singapore
Seawater RO plants
Carlsbad, California
Tuas, Singapore
- 16:00–17:00 Consideration of plant design optimization**
Project requirements included in the Project Scope Book
Feed water supply and site conditions
Power supply structure
Pilot unit operation
- 17:00–17:30 Questions and Discussions**

Day 2 – Roadmap to Successful Desalination Project Development

- 09:00–10:00 Overview of the project development process**
Type of project delivery alternatives and role of developer
Initial project prospecting and development – defining project scope
Developing of estimates for costs of water production and water sales
Obtaining of project entitlements
Use of plant site
Environmental permitting
Water purchase agreement
Power purchase agreement
Rights of way for access to intake and discharge
Rights of way for product water delivery

Procurement of turnkey construction and operation contractors
Project financing
Project design, construction, commissioning and acceptance testing
Desalination plant asset management during plant operation phase

10:00–10:45

Key project risks and their effective management

Permitting (licensing) risks
Entitlement risks
Risks associated with power supply and use of alternative power sources
Construction risks
Source water quality related risks
Technology risks
Regulatory risks
Operational risks
Desalinated water demand risks
Financial risks

10:45–11:00

Coffee break

11:00–12:00

Project Delivery alternatives - role of project developer/owner

Design-bid-build (DBB)
Design-build-operate (DBO)
Build-own-operate (BOO) and build-own-operate-transfer (BOOT)
Concession

12:00–13:00

Initial project scoping and development

Defining product water quantity and quality
Selecting plant site – location, configuration and size
Identifying the most suitable type of intake and outfall
Selecting key desalination process treatment processes
Finding cost competitive power supply sources

13:00–14:00

Lunch break

14:00–15:00

Determining water production costs and project funding

Engineering, procurement and construction costs
Operation and maintenance costs
Costs of water production
Water sales tariff
Project funding alternatives and their contractual structure

15:00– 15:15

Coffee break

15:15–16:00

Project permitting – key issues and considerations

Intake permitting issues
Concentrate discharge – challenges and solutions
Product water quality related permitting considerations
Addressing zero carbon-footprint requirements for desalination plants
Selecting key desalination process treatment processes

16:00–17:00

Project development case studies

200,000 m³/d Carlsbad SWRO desalination project, USA
20,000 m³/d Majis SWRO desalination project, Oman

17:00–17:30

Questions and discussions

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Registration fee:

Before October 1, 2017 **€3,200**

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