

€ TRAINING

Desalination Essentials





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Introduction:

This training program is a comprehensive educational initiative aimed at providing professionals with the knowledge and skills necessary to effectively manage desalination plants. Through it participants will gain insights into desalination plant design, engineering, and post-treatment processes, enabling them to address challenges and ensure efficient and sustainable operation of desalination facilities.

Program Objectives:

At the end of this program, participants will be able to:

- Apply and gain an in-depth knowledge on the operation, heat balance, performance, optimization, start-up and troubleshooting of MSF and RO water desalination plants.
- Develop a good understanding of thermal and flash desalination, single and multiple effects of evaporation, fouling, scaling and the recent trends desalination.
- Describe the RO membrane desalination processes and the basic principles of MF and UF, including the fouling and cleaning of these systems.
- Develop a good understanding of the basic principles and design of reverse osmosis technology RO.
- Discuss fouling, pre and post-treatment for RO and NF systems?Employ the method of disposal in brackish and SWRO and compare membrane and distillation.

Targeted Audience:

- Water engineers.
- Plant managers.
- Environmental consultants.
- Regulatory authorities.
- Maintenance personnel.

Program Outlines:

Unit 1:

Fundamentals of Water Desalination:

- Introduction to water desalination and its significance.
- Understanding the principles of desalination processes.
- Overview of common desalination technologies such as reverse osmosis, distillation, and electrodialysis.
- Factors influencing desalination plant design and operation.
- Case studies showcasing successful water desalination projects worldwide.

Unit 2:

Desalination Process Technologies:

- In-depth exploration of various desalination processes and their mechanisms.
- Comparative analysis of different desalination technologies in terms of efficiency, cost, and energy consumption.
- Understanding pre-treatment processes such as filtration and chemical conditioning.
- Hands-on training on operating desalination equipment and systems.
- Troubleshooting common issues in desalination processes.

Unit 3:

Desalination Plant Design and Engineering:

- Principles of desalination plant design and layout.
- Considerations for site selection and environmental impact assessment.
- Engineering aspects of desalination plant construction and installation.
- Integration of desalination plants with existing water infrastructure.
- Regulatory requirements and permits for desalination plant construction and operation.

Unit 4:

Desalinated Water Quality and Post-Treatment:

- Quality parameters of desalinated water and their significance.
- Post-treatment processes to enhance water quality and taste.
- Monitoring and control techniques for ensuring desalinated water meets regulatory standards.

- Strategies for managing brine discharge and minimizing environmental impact.
- Case studies on successful post-treatment practices in desalination plants.

Unit 5:

Desalination Plant Management and Operation:

- Operational strategies for efficient desalination plant management.
- Maintenance practices to ensure optimal performance and longevity of desalination equipment.
- Personnel training and safety protocols for desalination plant operations.
- Emergency response procedures and contingency planning for unexpected situations.
- Best practices for community engagement and stakeholder communication in desalination projects.