



THE CHEMICAL ENGINEERING MAJOR

Desalination Plants: Operation, Heat Balance, Performance, Optimization, Start-Up and Troubleshooting

Website: www.btsconsultant.com

Email: info@btsconsultant.com

Telephone: 00971-2-6452630



www.btsconsultant.com

Desalination Plants: Operation, Heat Balance, Performance, Optimization, Start-up and Troubleshooting

Introduction:

The main aim of the programme is to introduce participants to up-to-date developments, knowledge and practice in thermal desalination technologies, with emphasis on process design characteristics and performance under different modes of operation.

Objectives?

At the end of the programme, participants will be able to:

- Identify process characteristics of various thermal desalination technologies.
- Get familiarized with major systems' components and design features and requirements of commonly used thermal desalination technologies.
- Understand main process of all water sources.
- Basic water Chemistry.
- Principles of (EDR) system and (RO) system.
- Pre-Treatment and maintenance.
- Understand main process performance parameters of different desalination processes.
- Cost effectiveness of equipment maintenance.

- Practice basic process modeling requirements and available techniques, and perform simplified process performance evaluation.

Contents:

Source of feed water.

1. Water desalination main processes:-
 - Reverses Osmosis.
 - Distillation.
 - Ion exchange.
 - Electro dialysis.
1. Filtration process:-
 - Micro filtration.
 - Ultra filtration.
 - Nano filtration.
 - Reverses Osmosis.
1. Theory of reverse Osmosis.
2. Reverses Osmosis terminology.
3. Definitions-RO process.
4. Factors and parameters related to RO process.
5. Membranes:
 - Membranes configurations and types.
 - Spiral wound membrane.
 - Overview.
 - Construction.
 - Separation.
 - Fluid dynamics.
 - Reverses Osmosis plant:-
 - Feed water intake system.
 - Pre-treatment system.

- Desalination system.
- Post treatment system.
- Operating data.
- Operating procedures.

1. Troubleshooting.
2. Fouling:-
 - Types of fouling.
 - How to prevent fouling.

1. Scaling:-
 - Nature of scaling
 - Prevention of scale formation

1. Chemical cleaning:-
 - Timing for cleaning.
 - Cleaning system.
 - Types of cleaning.
 - Cleaning procedure.
 - Cleaning chemicals.

1. Main equipment's & devices are using in water desalination R.O. Plants:-
 - Pumps, high pressure pump and centrifugal pump.
 - Air compressors and pneumatic valves.
 - Meters /flow & quantity.
 - PH, cond. & ORP devices