



# Hadera Sea Water Desalination Plant

## ONE OF THE WORLD'S LARGEST SWRO DESALINATION PLANTS



### Capacity

137,000,000 m<sup>3</sup>/year  
(111,000 acre feet/year)



### Max Potential

160,000,000 m<sup>3</sup>/year  
(130,000 acre feet/year)



### Technology

RO (Reverse Osmosis)



### Project Type

25 Year BOT  
(Build-Operate-Transfer)



### Shareholders

IDE Technologies (50%)  
+ H&C (50%)



### Location

Orot Rabin Power  
Station,  
Hadera, Israel



### Commissioned

2009



### Operation

January 2010

## MARINE PIPES :

### 3 pipes each

1.25 km (4100 ft.) long

1.8 m (72") diameter

## INTAKE :

5 vertical intake pumps

45,000 m<sup>3</sup>/hr (200,000 gpm)  
total

## PRETREATMENT :

Dual Media Gravity Filters

Micronic Filtration - 20 micron  
cartridge filtration - last barrier  
before membranes

## SWRO + ENERGY RECOVERY SYSTEM:

53,000 membranes in total  
(36,000 SWRO + 17,000 BWRO)

8 high pressure pumps

6 MW each motor

Energy Recovery System - ERI

Saving ~45% of the energy  
required for desalination

8 membranes DOW-Filmtec  
(Dupont) in each pressure vessel



# BWRO (CASCADE) - BORON REMOVAL:

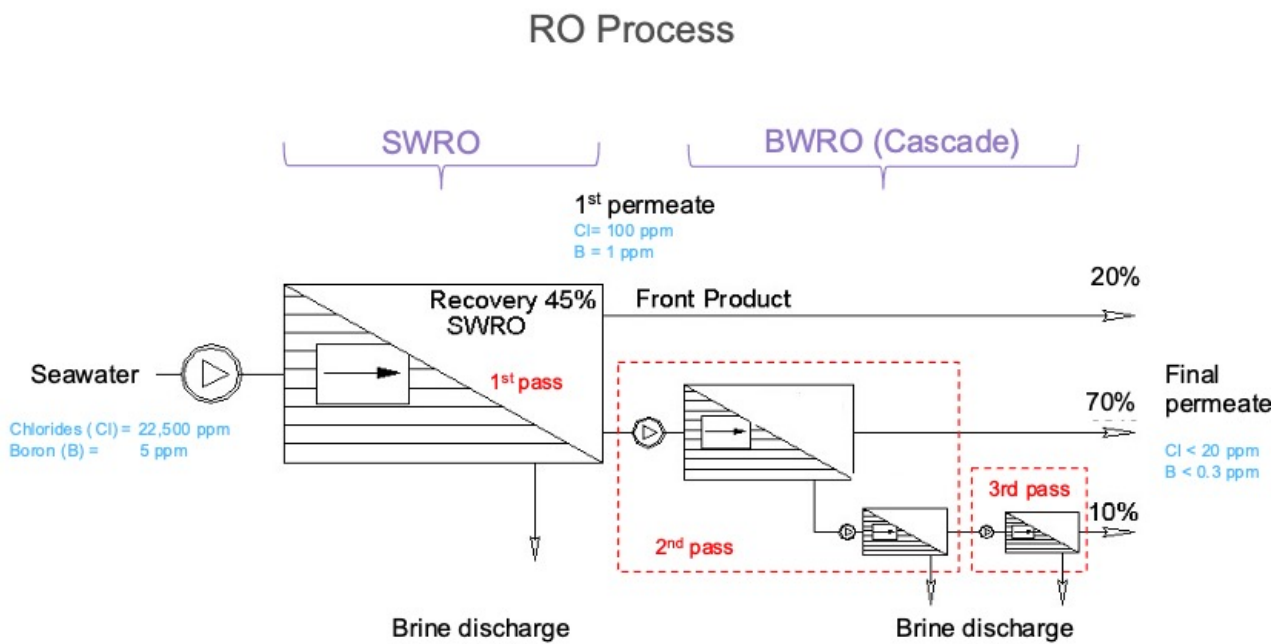


**Boron required in final product 0.3 ppm**

• Boron after seawater desalination ~ 1 ppm. Low rejection!



**Additional desalination of the SW permeate at high pH (>10),**  
by DOW Filmtec brackish water membranes



## POST-TREATMENT:

Reaction occurs in 5 up-flow reactors

Re-hardening by: Limestone + CO<sub>2</sub> & H<sub>2</sub>SO<sub>4</sub>

Addition of Calcium Hydroxide H<sub>2</sub>SO<sub>4</sub>

## PRODUCT DELIVERY POINT:

90 minutes from seawater to drinking water delivery point

Drinking water production: up to 20,000 m<sup>3</sup>/hr (88,200 gpm)