BAHIA DE PALMA

seawater reverse osmosis desalination plant
Mallorca (Spain)

project

Mallorca is Spain's largest island with a population of around 540,000. During a severe drought in 1995 the island was forced to ship in water from mainland Spain which triggered the Bahia De Palma desalination plant project. In October of 1997, SUEZ was awarded a contract to Design, Build and Operate (DBO) a 68,000 m³/day saltwater reverse osmosis plant. Financed by the Spanish Environmental Ministry, under the operational arm of CEDEX, and with its civil construction partner Copisa, SUEZ completed the design and build phase of the project in 1999. The plant is located 2 km inland from the coast and saltwater is pumped to the site from 10 seawater wells where it is processed and distributed around the island to the capital, Palma (pop 375,000) and the surrounding municipalities.

degremont® design

Seawater is pumped 2 km from ten seawater wells.

RO pre-treatment

- A chemical dosing system able to dose sodium hypochlorite, sulfuric acid, sodium bisulfite and coagulant.

- 9 horizontal pressurised dual media sand fi lters 4m (diameter) and 12 m (length).

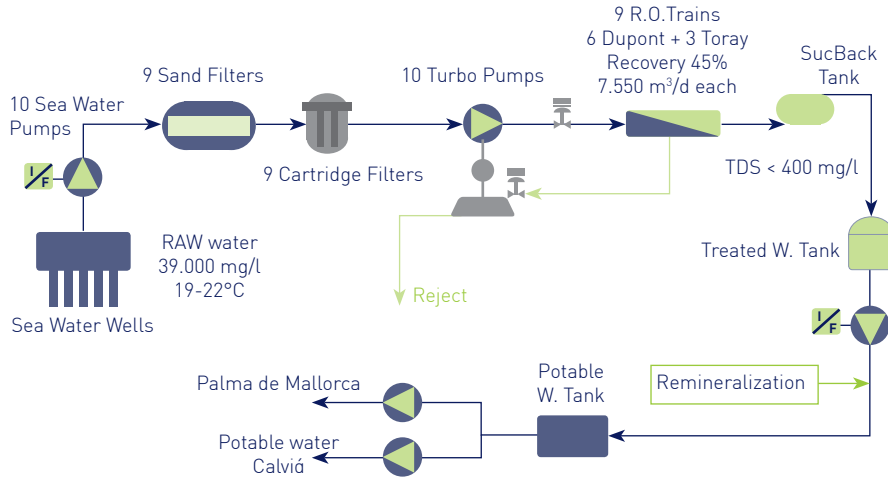- 9 cartridge fi lters with 150 cartridges.

reverse osmosis

To comply with water quality requirements of no more than 400 mg/l TDS, a single pass degremont® RO system is used:

- Approximately 151,000 m³/day saltwater is pumped to the RO system which is composed of 10 turbo pumps and 9 trains of membranes with a 45% recovery rate.

- Energy recovery is via Pelton turbine.

- Permeate is remineralised with hypochlorite, lime and CO_2 then pumped to the islands drinking water distribution system.

degremont® treatment line

9 Sand Filters   10 Turbo Pumps   9 R.O.Trains
6 Dupont + 3 Toray
Recovery 45%
7.550 m³/d each   SucBack Tank

10 Sea Water Pumps

9 Cartridge Filters

TDS < 400 mg/l

RAW water
39.000 mg/l
19-22°C

Treated W. Tank

Reject

Sea Water Wells

Remineralization

Palma de Mallorca

Potable W. Tank

Potable water
Calviá

characteristics

Seawater Intake	151,000 m³/day	Temperature	19°c - 22°c	Conversion Factor	45%
Seawater SDI	3 to 10	RO TDS	< 400 mg/l	Drinking Water TDS	< 400 ppm
Seawater Salinity	39,000 mg/l	Production m³/day	68,000	Started Production	1999