

S.W.R.O. Santa Eulalia (Ibiza - Spain)

Name: SWRO Santa Eulalia
Client: Ministry of Environment
Located: Santa Eulalia, Ibiza (SPAIN)
Start up: 2011



This contract includes the complete design, construction, commissioning and O&M during 15 years of the SWRO, including the disciplines of process design, civil works construction, supply and construction of electrical and mechanical equipment, automation and control of the SWRO, remineralisation system, energy optimization, start-up and commissioning.

DESIGN DATA

Water produced: 15.000 m³/day
Desalination process: Reverse Osmosis
Recovery rate: 45%

TREATMENT

Sea water intake: Open Intake

4 (3+1) centrifugal pumps. $Q_u = 515 \text{ m}^3/\text{h}$

Chemicals for chemical pre-treatment

Sodium hypochlorite

Design dosage: 2,5 ppm
2 (1+1) Membrane dosing pumps, $Q_u = 36 \text{ l/h}$. 1 Tank, $V = 20.000 \text{ l}$

Ferric chloride

Average dosage: 5 ppm
2 (1+1) Membrane dosing pumps, $Q_u = 36 \text{ l/h}$. 1 Tank, $V = 20.000 \text{ l}$

Sulphuric acid

Average dosage: 25 ppm
2 (1+1) Membrane dosing pumps, $Q_u = 42 \text{ l/h}$. 1 Tank, $V = 20.000 \text{ l}$

Sodium bisulphite

Design dosage: 20 ppm
2 preparation tanks, $V = 2000 \text{ l}$.
2 (1+1) Membrane dosing pumps, $Q_u = 260 \text{ l/h}$

Antiscalant

Average dosage: 5 ppm
2 preparation tanks, $V_u = 1.000 \text{ l}$
2 (1+1) Membrane dosing pumps, $Q_u = 110 \text{ l/h}$

Sodium hydroxide

Design dosage: 5 ppm
2 (1+1) Membrane dosing pumps, $Q_u = 36 \text{ l/h}$. 1 Tank, $V = 20.000 \text{ l}$

Filtration

6 Units, horizontal pressurized filters, $\varnothing = 3,60 \text{ m}$
Filter media: anthracite, silica sand and garnet
3 horizontal centrifugal pumps for backwashing, $Q_u = 410 \text{ m}^3/\text{h}$
2 (1+1) Blowers for filters backwashing $Q_u = 2.300 \text{ Nm}^3/\text{h}$
1 Brine storage tank for backwashing $V = 187,87 \text{ m}^3$.

By-products storage and pumping

1 effluents tank $V = 187,87 \text{ m}^3$.
2 (1+1) Horizontal centrifugal pumps, $Q_u = 100 \text{ m}^3/\text{h}$

Microfiltration

5 units cartridge filters (150 cartridges per filter)

High pressure pumping to osmosis racks

4 (3+1) High pressure pumps, $Q_u = 465 \text{ m}^3/\text{h}$

Membrane racks

Nº racks: 3 units.
Nº pressure vessels per rack: 66
Nº de membranes per pressure vessel: 7 units
Total amount of membranes: 1386 Uds.

Energy Recovery

3 turbines PELTON type.
Efficiency (± 5) 86%.
Energy recovered: 382,43 Kw

Remineralisation system (Calcium Hydroxide + CO₂)

Product water pumping

4 (3+1) Horizontal centrifugal pumps, $Q_u = 230 \text{ m}^3/\text{h}$