

Puerto del Rosario II Desalination Plant Expansion Project, Stage 2.

1/2



Location	Puerto del Rosario - Las Palmas
Customer	Canary Islands Government
Construction period	12 months
Capacity	5.300 m³/day

The purpose of this seawater treatment plant is to produce and supply drinking water for Fuerteventura Island. In this expansion project, the water production system is changed from a steam compression module to a reverse osmosis system thereby increasing production by 5,300 m³/day.

The desalination plant has the following installations:

1. Physical treatment:

– Seawater catchment

The catchment consists of a well dug to a depth of six meters below sea level, with a capacity of 1,100 m³/h and two 550 m³/h centrifuge pumps at 7 w.c.h., two automatically primed generators as well as the necessary valves and piping.

– Sand filter

Two 9 meter long filters with a 2.5 meter diameter. Each filter has the following:

- 1.000 units of noozles.
- 30 tons of silica sand with 0.50 mm effective size
- Automatic valves for:
 - Seawater inlet
 - Filtered water outlet
 - Washing air inlet
 - Washing water inlet
 - Washing water outlet
 - Vent
 - Drain

– Spark plug filters

Formed of two cartridge filters, each consisting of:

- Set of inlet and outlet valves.
- 180 cartridges of 5 micras.
- Vents and drainage.

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2/2



The piping and valves of the installation as described were calculated so that the production capacity can be tripled in the future, adding new lines, without modifying the current installations.

– High pressure pump

A 550 m³/h pump, with an inlet pressure over 19.6 N/cm² (2 Kg/cm²) and an outlet pressure of 784 N/cm² (80 Kg/cm²). The features of this pump are:

- Engine power: 1,000 kW
- Type of pump: Split chamber (multi-stage)
- Type of turbine: Pelton split chamber recovery

– Osmosis rack

Consists of 64 pressure boxes with 1500 psi, 448 spiral wound membranes and SMO 254 stainless steel piping.

2. Chemical treatment:

– Agent dosing process

This system consists of the following installations:

- Bisulphite: two 1 m³ preparation tanks and two dosing pumps.
- Hexametaphosphate: two 1 m³ preparation tanks and two dosing pumps.

– Membrane cleaning

The following installations are used to clean the membranes:

- 10 m³ tank with 54 Kw heater to prepare the cleaning products.
- Mixer.
- Two horizontal centrifuge pumps, each with polypropylene impeller and 250 m³/h flow for handling and cleaning membranes.

3. Electrical installation:

- Two transformers, one with 1250 Kwa and the other with 3000 Kwa.
- Machine control centre (CCM), not extractable.
- Distributed control system.
- Instrumentation.

4. Auxiliary installations:

- A blower for the filter washing process.
- A worm compressor to provide compressed air throughout the plant.