

Extension of Melilla Water Treatment Plant

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Location	Melilla
Client	Environment Ministry Guadalquivir River Basin Confederation
Date of adjudication of contract	16th of March of 2005
Duration	7 months
Flow capacity of the existing plant	21.600 m³/day
Flow capacity of desalination plant	15.000 m³/day
Technology	Reverse Osmosis
Membrane	Spiral wound (SW)
Most important feature	Membranes with low energy consumption
Final use	Drinking Water

The work in this project involved:

- Design of process, civil engineering and electromechanical equipment.
- Feeder connection with the product pipe from the Melilla waste water treatment station.
- Building of the reverse osmosis plant for a flow of 15,000 m³/day.
- Connection with the product pipe from the Melilla waste water treatment station.
- Complementary installations for the treatment station (connection with electrical line, etc).
- Test operation and maintenance for five months (November 2006 – March 2007).

Design

The proposed treatment line for the water treatment plant consists of two R.O. lines with the following installations and processes:

Water line in existing waste water treatment plant (WWTP):

- Pumping of water from supply wells or from the River Oro.
- Measurement of inlet flow.
- Dosing of process reagents (ferric chloride, polyelectrolyte, lime and sodium hypochlorite).
- Decantation
- Clarified water tank
- Pumping of clarified water to sand filters.
- Filtering in sand filters
- Filtered water tank.

Water line in Melilla desalination station

- Connection with water outlet in WWTP.
- Flow regulation and measurement.
- Addition of process reagents (sodium bisulphate and anti-scaling reagent).
- Pumping to cartridge filters.
- Micro filtering with cartridge filters.
- Measurement of conductivity, temperature, pH and redox potential of micro filtered water.
- Measurement of micro filtered water flow.
- Pumping to reverse osmosis racks.
- Desalination in two reverse osmosis lines.
- Measurement of treated water flow.
- Measurement of conductivity, temperature and pH of treated water.
- Connection of plant outlet with WWTP outlet pipe.