EL ATABAL

brackish water desalination plant (Spain)

project

This plant offers the city of Malaga a real solution in the event of a prolonged water shortage, in terms of both quantity and quality. The project was carried out by the Ministry of Environment, with the participation of the Municipality of Malaga. Thanks to this project, Malaga will increase its water offer, exceeding its needs, and will achieve a water quality level comparable to any other European town.

El Atabal produces 165,000 m^3/day of desalinated water. The treatment enables to reduce the salinity level from 6.47 g/l to 0.2 g/l. The plant also offers the possibility to make a better use of the water coming from the Guadalhorce dam in order to supply the city of larger quantities of water.

process

Salt is removed using the reverse osmosis process, following pretreatment carried out using the clarifiers and sand filters comprising the existing drinking water production plant.

The desalination process was designed featuring two stages: the first stage processes the whole flow rate, while the second stage processes the brine discharged from the first stage (with a double saline concentration), using the same type of membrane. Thus, 80% of the raw water supplied to the plant is used.

Energy recovery turbines and variable speed drives were installed in the feed pums of the reverse omosis membranes, therefore it is possible to achieve an energy recovery rate of 80%. The brine is discharged into an outfall sewer that is more than 6 km long and is 800 mm in diameter, which routs it to the sea sewer outlet at the Guadalhorce treatment plant. Through the mixing of the two outfall sewers, the environmental impact is reduced.

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pretreatment

- disinfection
- coagulation
- settling
- filtration through sand
- filtration through cartridges

reverse osmosis

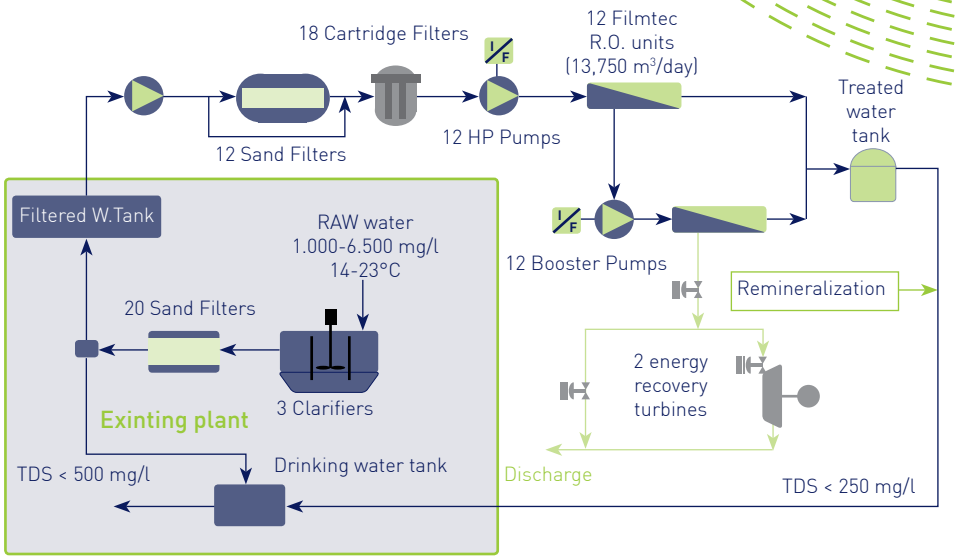
- 8,400 polyamide membranes were distributed between 12 treatment frames with 700 membranes, with a unit capacityof 13,750 m³ of desalinated water per day

feed

- 12 high-pressure pumps: 717 m³/h at 23.6 kg/cm²
- 12 booster pumps: 355 m³/h at 11.2 kg/cm²

post-treatment

- disinfection is carried out using sodium hypochlorite dosing
- the pH is corrected with lime dosing in the pipe



key figures

capacity	165,000 m³/day	membranes installed	8,400	Energy consumption	0.72 - 1.19 kWh/m³ 119.2 to 196.8 MWh/day
intake salinity	6.47 g/l	maximum operating pressure	32 kg/cm²	Maximum energy produced	25.6 MWh/day
outlet salinity	< 0.2 g/l	drinking water production ratio	80%	two Pelton turbo-alternators	680 kW each

contacts

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