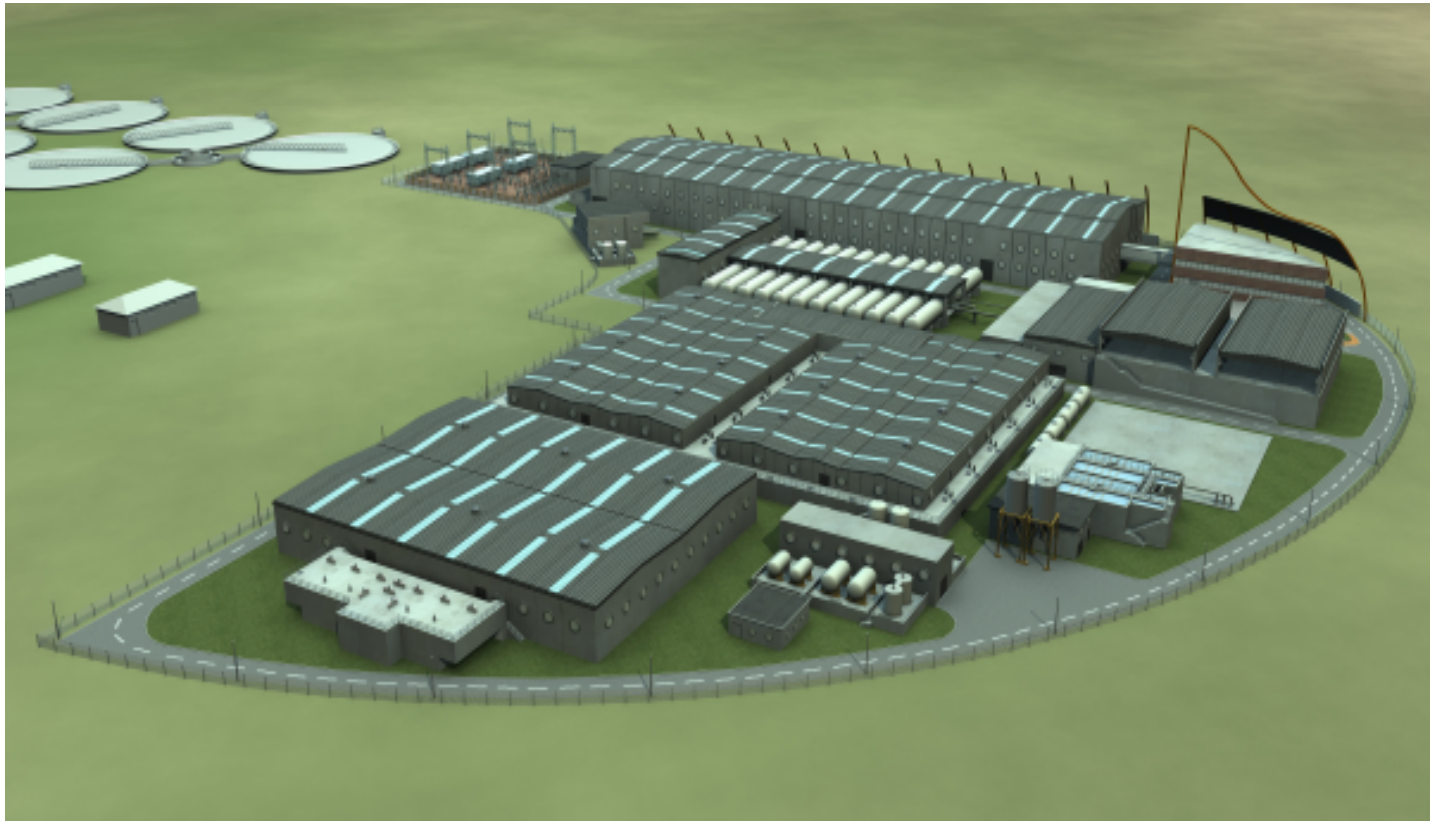


Barcelona sea water desalination plant

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Location	Barcelona
Client	ATLL – Aguas Ter Llobregat
Start date	22nd of May of 2007
Schedule	53 months
Capacity	200.000 m³/día
Treatment	Reverse Osmosis
Equipment	Spiral membrane
Most important features	Power recovery with pressure exchange

Sodium Content	< 150 ppm
Chlorines content	< 200 ppm
pH	6,5 – 8,5
Hardness	≥ 60 ppm as CO₃Ca
Alcalinity	≥ 30 ppm as CO₃Ca
Langelier index (LSI)	Positive
TDS (permeated water)	< 400 ppm
TDS (water after treatment)	< 600 ppm

Drace Medioambiente has been adjudicated the design and building of the Barcelona desalination plant with a capacity of 200,000 m³/day of desalinated sea water. The pilot plant and building design have been developed in the first five months, ready for the building of the future installation. The results are shown in the following table:

Water will be taken in either by a 2,400 mm diameter underwater inlet or by drainage pipes in the coastal area with a pumping station to send the water to the site of the desalination plant, next to the Baix Llobregat waste water treatment and re-use station. Brine will be disposed of using the existing outfall from the waste water treatment plant.

Barcelona sea water desalination plant

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The results from the pilot plant now in operation provide the conclusions for defining the size of the desalination plant, which will have the following process:

Clarifying	Decanting or flotation
Open Filters	Two layer filters (sand/pumice stone)
Filtered water pumping	2 x 6 centrifugal pumps, 1.900 m³/h
Filter washing water tanks	2.600 m³
Closed filters	Metal filters (sand)
Brine pumping	3 centrifugal pumps, 1.000 m³/h
Cartridge filters	18 filters 5 μ with 360 cartridges
High pressure pumping	10+1 high pressure pumps, 862 m³/h 10+1 booster pumps, 1.001 m³/h

Power recovery	10 lines of pressure exchangers
Racks 1st pass	10 of 240 pipes
Racks 2nd pass	< 200 ppm
Displacement tank	6,5 – 8,5
Clacite bed	≥ 60 ppm as CO₃Ca
Treated water tank	≥ 30 ppm as CO₃Ca
Treated water pumping	Positive
Foul water tank	< 400 ppm
Treatment of effluents	2 laminar thickeners of 32 m²
Sludge drying	2 centrifuges
Sludge storage	2x50 m³