



Successful Start-Up and Operation of Seawater Desalination Plant in Spain

DOW Technology helps Maspalomas-I deliver freshwater with pressurized ultrafiltration pretreatment



Dow Water & Process Solutions is providing Ultrafiltration technology to the largest municipal desalination plant in Spain operating with pressurized ultrafiltration as a pretreatment, to help meet the growing demand for potable water in the Canary Islands. The desalination plant, Maspalomas-I, located in Gran Canaria, Spain, and designed and furnished by Elmasa Tecnología del Agua S.A., is equipped with DOW IntegraPac™ Ultrafiltration IP-77 skids and DOW FILMTEC™ Reverse Osmosis membranes. The combined DOW™ Ultrafiltration and Reverse Osmosis system effectively helps produce clean, potable water for the main tourist areas of the island.

Bordered by seawater on all sides and experiencing low levels of annual rainfall, freshwater is a scarce resource on the island of Gran Canaria. With more than 12 million visitors per year, the island's local water demand has steadily risen, requiring Maspalomas-I to extend its water processing capacity to 14,500 cubic meters per day (m³/d). However, the plant's existing seawater intake system based on beach wells did not have the capability to provide the required feedwater flow to accommodate for the plant's expansion, so a new open intake had to be constructed.

A two-stage pressurized filtration system was studied as conventional pretreatment for the new open intake. Conventional sand filters were initially considered; however, they did not meet

footprint constraints, showed lower recovery and robustness for variable feeds, and resulted in higher civil works costs associated with construction and installation. DOW IntegraPac™ Ultrafiltration, capable of producing 32,250 (m³/d), was ultimately chosen for the plant after a 10 month on-site pilot trial, facilitating higher recovery, minimum chemical consumption, and a lower lifecycle cost.

IntegraPac Ultrafiltration technology streamlines design and installation, resulting in lower skid costs, reduced engineering design costs, easy assembly, less space requirements, and shortened lead times. The system's easy assembly and installation was a critical component for Maspalomas-I in order to reduce local civil works and transportation costs. Dow ultrafiltration technology is based on a technically advanced Polyvinylidene fluoride (PVDF) hollow fiber with uniform pore size that maintains high performance under a wide range of feed water conditions. Its unique outside-in fiber technology facilitates higher solids loading, higher flow area, and easy cleaning.

Fast Facts

Country:	Spain
End-User:	Elmasa Tecnología del Agua S.A.
Feed Water Source:	Seawater, Open Intake
Feed Water Quality:	Variable
Start-Up Date:	April 2013

Performance

Operating Flux:	65-80 LMH
UF Plant Capacity:	32,250 m ³ /day
Transmembrane Pressure (TMP):	0.55 - 0.80 bar
UF Recovery:	> 97%
UF Energy Consumption:	0.07 kWh/m ³
UF SDI Filtrate Average:	1.73; 90% of time below 2.30

No Clean in Place (CIP) procedures have been needed as of May 2014