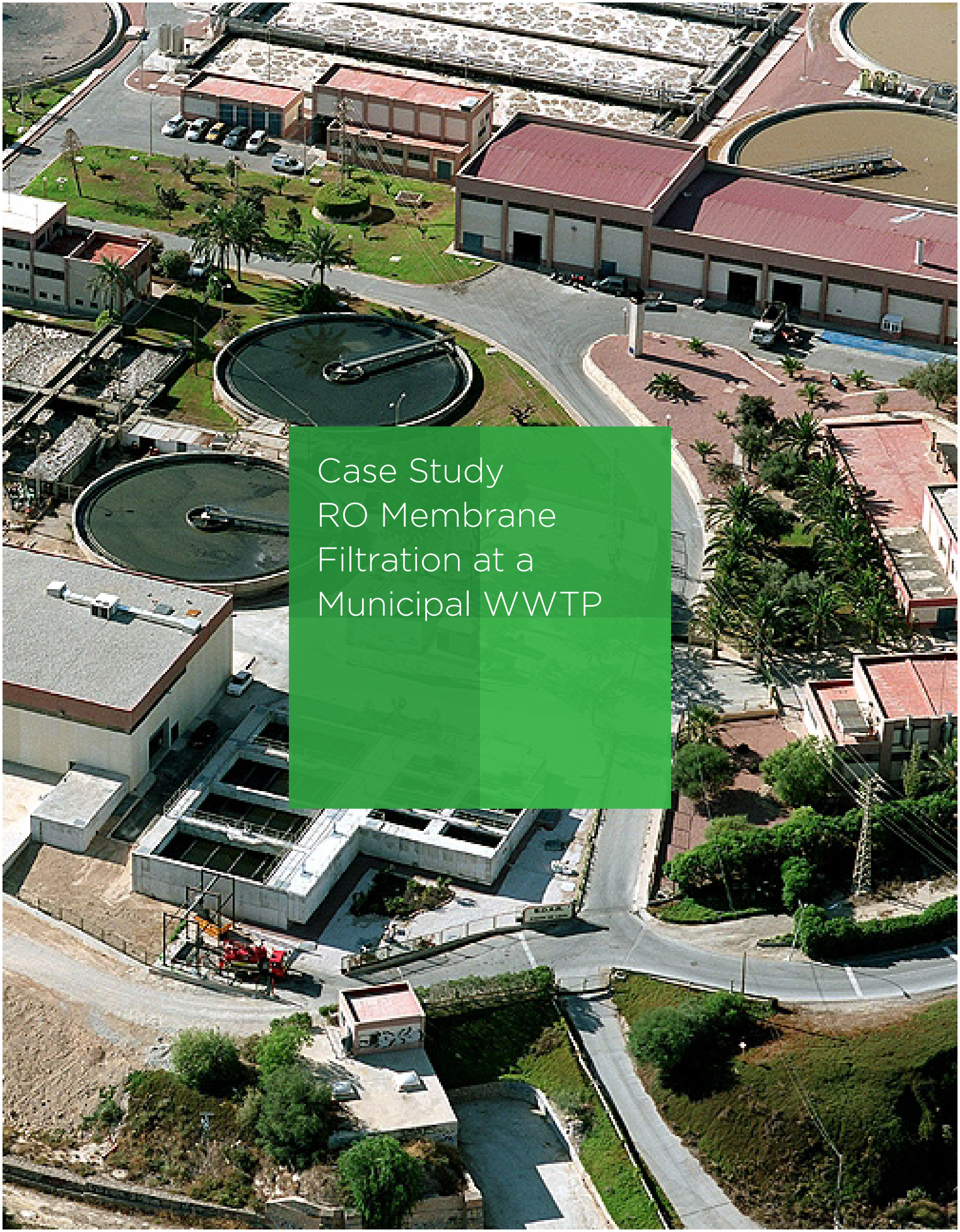


Case Study RO Membrane Filtration at a Municipal WWTP

MANN+HUMMEL

Case Study: Municipal RO Treatment of High-Fouling Wastewater

An RO system using TRISEP® X-20™ membrane elements converts high-fouling wastewater to high-quality irrigation water with long element life.

PROBLEM
Treating high-fouling wastewater for irrigation reuse

SITE
Large wastewater treatment plant in the Alicante region of Spain

OUTCOME
RO permeate water <100 µS/cm, RO membrane element lifetime ~4 years

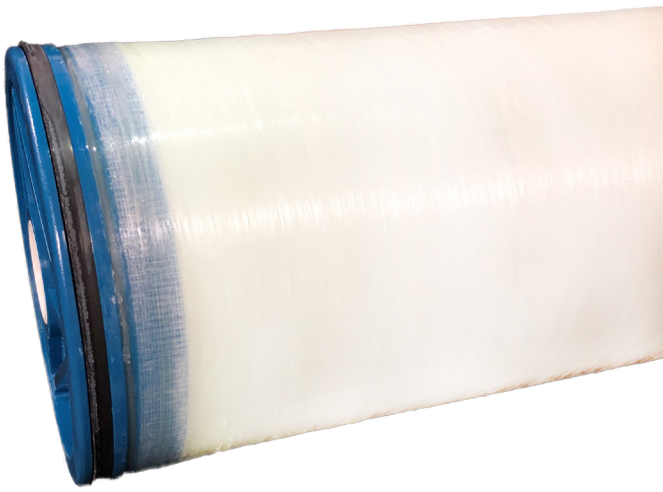
A large municipal wastewater treatment plant constructed a tertiary treatment facility for irrigation reuse.

Increased growth in the region of Alicante, Spain led to the implementation of a plan to develop and reuse the region's water resources. A tertiary treatment facility was constructed at the wastewater treatment plant of a major municipality that incorporates a lamella clarifier, an ultrafiltration membrane system, and an RO system. The treated municipal water from the RO system is blended with ultrafiltration permeate and used for irrigation water for produce in l'Alcantí and Medio Vinalopó.

TRISEP® X-20™ low-fouling RO membrane elements were chosen for this system in part due to reports of solids passage through the UF (fiber breakages), causing RO cartridge filters to require replacement on a frequent basis. Early on, these solids breakthroughs to the RO led to frequent membrane cleanings. Despite these initial pretreatment issues, the X-20 membrane elements recovered flow and operate at 11.1 GFD with 75.0% recovery and consistently produce permeate with a conductivity <100 µS/cm.

TRISEP® X-20™ MEMBRANE

X-20 membrane is based on a unique, patented thin-film polyamide-urea membrane chemistry and is specifically designed for challenging, high-fouling feedwaters. This unique surface chemistry leads to less overall fouling of the membrane elements, and better flow recovery following cleaning. The tertiary treatment plant, including robust desalination with X-20 membrane, continues to provide the region with high quality water for re-use.



TRISEP X-20 spiral-wound membrane element

Membrane Element Success In High-Fouling Feedwater

Table 1 Plant design

Parameter	Description
Design Recovery	75.0% System (83.3% Overall)
RO Permeate Flow	5.9 MGD (22,000 m³/d)
Blended Permeate Flow	6.6 MGD (25,000 m³/d)
Operating Flux	11.1 GFD (18.8 LMH)
Feed Conductivity	2,800 µS/cm
RO Permeate Conductivity	< 100 µS/cm
RO Membrane Element Life	4 Years

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