PX RETROFIT RESTORES RELIABLE PRODUCTION AND LOWERS OPERATING COSTS AT ONE OF SPAIN'S LARGEST DESALINATION PLANTS





LOCATION
Águilas, Murcia, Spain

PROJECT
Águilas-Guadalentín

OPERATOR
Ferrovial-Cadagua-Sacyr Agua

PRODUCT
PX Q300

PLANT CAPACITY
180,000 m³/d

RETROFIT COMMISSIONED
October 2025

INTRODUCTION

The Águilas-Guadalentín desalination plant is one of the largest SWRO facilities in Spain and a critical water source for agriculture across the Murcia and Almería provinces. After over a decade in operation, recurring problems with the plant's existing energy recovery devices (ERDs) were causing production issues, safety concerns, and rising maintenance costs. The state-owned company, Aguas de la Cuencas Mediterráneas, S.M.E., S.A., selected Energy Recovery's PX® Pressure Exchanger® technology, specifically the PX Q300, to replace the obsolete ERD units across all trains. The retrofit restored stable production, ended the repeated shutdowns tied to the previous devices, and lowered the plant's ongoing operating costs. The replacement work was carried out by the joint venture Ferrovial-Cadagua-Sacyr Agua.

THE CHALLENGE

Protecting Water Supply for One of Europe's Most Water-Scarce Regions

Spain's Segura River basin is one of the driest in Europe, with average annual rainfall of just 365 mm. Normal water demand exceeds available natural resources by more than 30%, even after accounting for inter-basin transfers, desalination, and water reuse. The region's irrigated agriculture, responsible for a significant share of Spain's fruit and vegetable exports, depends heavily on desalinated water, and that dependence is growing.

The Águilas-Guadalentín desalination plant, operated by the Ferrovial-Cadagua-Sacyr Agua joint venture and built under Spain's A.G.U.A. program, has been operational since 2013. It treats 180,000 m³/day of seawater, with expansion plans to increase capacity to 210,000 m³/day by the end of 2026. It supplies desalinated water for irrigation across roughly 16,000 hectares in Murcia and Almería, as well as municipal supply for the cities of Lorca and Águilas. The plant originally used piston-type ERDs across its RO racks. Over time, these devices became an operational and safety liability for the plant. The high cost and long delivery times for replacement parts made the situation increasingly untenable for a plant that supports both agricultural livelihoods and municipal water supply.

THE SOLUTION

PX® Pressure Exchanger® Technology: Reliability at Scale

Aguas de la Cuencas Mediterráneas, S.M.E., S.A. together with Ferrovial-Cadagua-Sacyr Agua selected Energy Recovery's PX Q300 to retrofit the units across the plant. For a plant of this scale, reliability and durability are requirements. The PX Q300 has a 30-year design life and delivers 99.8% uptime with no wear parts and no routine maintenance. Because the PX requires no scheduled maintenance, the retrofit removed an entire category of preventive maintenance the plant had been carrying, while also cutting the corrective maintenance and downtime costs that came with the previous devices. The PX also lowered the plant's power consumption and operating expense compared to running without energy recovery.



Why It Matters

Spain ranks fourth globally in desalination capacity, with over 765 plants serving coastal communities and agricultural regions. Many facilities built in the 2000s still run legacy energy recovery equipment that introduces unnecessary maintenance burden and downtime risk.

The Águilas-Guadalentín retrofit is one of the largest PX conversions completed in Spain, and it demonstrates that even at industrial scale, upgrading to PX technology is a seamless and practical path for operators who need to protect production uptime and lower operating costs on existing infrastructure.

THE RESULT

- Ended the unplanned shutdowns caused by the previous ERDs, restoring reliable, continuous production across all trains
- Eliminated preventive maintenance on the ERDs, since the PX requires no scheduled maintenance
- Reduced corrective maintenance costs and the downtime cost of lost production availability
- Significant reduction in spare parts costs and procurement lead times
- Resolved safety and mechanical concerns from previous ERD
- Lowered plant power consumption and operating expense

Looking Ahead

The decision by Aguas de la Cuencas Mediterráneas, S.M.E., S.A. and the Ferrovial-Cadagua-Sacyr Agua joint venture to retrofit the Águilas-Guadalentín desalination plant with the PX is a strong example of proactive infrastructure management at scale. By addressing the previous ERD reliability issues head-on, the operator has secured stable production for a facility that plays a vital role in southeastern Spain's water supply, while delivering meaningful reductions in operating costs and maintenance burden.

For desalination operators across Spain, the Mediterranean, and beyond who are managing legacy ERDs, this project is a clear proof point: PX technology can be integrated into existing large-scale infrastructure with minimal disruption and immediate operational gains.

To explore PX solutions for your desalination plant, contact our team at sales@energyrecovery.com or configure your own solution using Power Model Pro.

To learn more, visit energyrecovery.com

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