

Case study | Acciona

ACCIONA relies on **Danfoss pumps** - builds SWRO plant and **reduces** **energy consumption**



88%

savings in power
consumptiondesalination.danfoss.com

In Sarroch on the southern coast of Sardinia lies the Mediterranean's largest ultra-pure water plant. Built by ACCIONA Agua in just six months, the containerized twopass SWRO plant provides the demineralized water for the steam needed to drive Sarlux Power Plant's turbines and keep the Saras Refinery in operation. Compact Danfoss APP pumps, iSave ERDs, VFDs, and pressure transmitters enabled operators to save an impressive 88% in energy consumption compared to the old distillation system.

The Saras Refinery and Sarlux Power Plant needed to update their shared ultra-pure water plant, which produced 24k m³/day. Not only did the aging distillation plant depend on a combination of SWRO and surface sources on water-starved Sardinia, its energy consumption was massive. And while electricity might be "free" for a power plant, the outsized energy bill represented a significant opportunity cost in lost sales revenue – not to mention a heavy carbon footprint.

The challenge: Provide 12,000 m³/day of ultra-pure water and reduce energy costs – fast

Refinery and power plant procurement departments put out a clear but demanding request for proposals: develop an ultra-pure SWRO solution that would provide half their requirement,

12k m³/day, and significantly reduce energy consumption. And do it all fast, with minimal capital expenditure.

ACCIONA Agua's engineers were familiar with Danfoss technology, and quickly determined that Danfoss APP pumps, iSave ERDs, pressure transmitters, and VFDs could be part of a winning bid.

The solution: A containerized, four-train plant, built around compact Danfoss pumps and ERDs, that could be installed quickly and without infrastructural modifications

Containerization was a key element of the winning bid. Not only could this save time and the construction costs of a new building to house the plant, it also did away with the need to build new seawalls, which would otherwise be necessary due to the plant's location right on the shore.

But containerization demanded compactness for all components.

As Pietro Tota, D&C manager at ACCIONA Agua explains, "Danfoss high-pressure pumps enable us to create systems that are not only energy-efficient but also extremely compact and can be placed in a container. Thanks to their small size and simplified internal design, they can be installed even when space is limited.

Just as importantly, they require very little periodic maintenance. iSave ERDs devices, which drastically reduce energy consumption, are also extremely compact and are easily integrated with Danfoss high-pressure pumps."

ACCIONA Agua's winning build-and-operate bid consisted of four ultra-pure SWRO trains in a total of four containers. In all, the plant uses 9 APP 86 pumps and 13 iSave 70 ERDs – as well as Danfoss pressure transmitters and VFDs for all high-pressure pumps, pretreatment pumps, and energy recovery devices.

The results: From idea to reality in just 6 months, an 88% reduction in energy consumption, and easy maintenance

The new SWRO plant reduced Sarlux's energy costs by a remarkable 88%, from about 20 kWh m³ to 2.4.

And while this reduced energy bill and carbon footprint were projected by ACCIONA Agua's engineers, the ease of maintaining such a large plant went beyond their initial expectations.

"The extreme ease with which high-pressure pumps can be maintained is one of the most valuable features of Danfoss technology," confirms Tota. "Unlike traditional centrifugal pumps, which typically need to be shipped to an authorized workshop for maintenance, we can perform the maintenance of Danfoss volumetric high-pressure pumps directly in Sarroch within a couple of hours, with an obvious benefit in terms of plant availability."

"We have great confidence in the technological partners chosen for the construction of the Sarlux modular desalination plant, the largest in the Mediterranean," Tota concludes. "We have come up with an innovative solution based on Danfoss's advanced technologies, and this has enabled us to achieve success and the full satisfaction of our end customer."



iSave 70 energy recover devices in the Sarlux SWRO plant



APP 86 pumps in the Sarlux SWRO plant



VFDs in the Sarlux SWRO plant

ACCIONA Agua is committed to innovation and the application of the latest technologies to design, construct, and operate drinking water treatment plants, residual purification plants, tertiary treatment plants for re-use, and reverse-osmosis desalination plants. A market leader in Spain, Italy and Portugal, ACCIONA Agua is active in 20 countries throughout Europe, Africa, the Middle East, Southeast Asia, and Latin America, as well as Australia and India. For more information, please visit www.accion-aagua.com

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