

## Cabo San Lucas SWRO Desalination Plant Cabo San Lucas, Mexico

### The Industry Standard Solution

The efficiency and lifecycle costs of a plant's energy recovery technology is critical to both winning SWRO projects and achieving maximum plant profitability through the lowest operating costs. Leading international OEM's such as Acciona Agua, Aqua Engineering, Befesa, CH2MHill, Cobra Tedagua, Doosan Hydro Technology, Fisia Italimpianti, GE Water Process and Technologies, GEIDA, IASUR, INIMA, Metito, Siemens and Suez Degrémont have selected the ERI<sup>®</sup> PX modular technology for their recent projects because it consistently achieves real energy transfer efficiencies—up to 98%, making it the most efficient energy recovery device available today. At the core of the PX device is a single moving rotor made of tough engineered ceramic that is unaffected by chemicals, will not corrode, and requires no periodic maintenance. Over 80 OEMs are standardizing on PX technology with installations around the world, including plants such as Al Shuaibah III, Barcelona, Chennai, Hama, Perth, Skikda, Torreveija and Yuhuan.



### The Situation

Spanish contractor, Inima, was awarded the new 20,000 m<sup>3</sup>/day Cabo San Lucas Desalination Plant project located in Baja California. With no prior experience using ERI's energy recovery technology, Inima selected PX Pressure Exchanger<sup>®</sup> (PX<sup>®</sup>) devices as the energy recovery solution for the largest plant in Mexico. The plant operates with a pressure center design (common high-pressure feed header and common concentrate header) to provide operational flexibility and minimize process downtime. The plant provides municipal drinking water to approximately 40,000 local residents.

### The Challenge

Prior to plant construction, the Baja region, similar to many areas around the world, faced a shortage of water as well as water quality problems. The availability of power was a core challenge in the region, and traditional desalination plants had no energy recovery devices to minimize this cost burden. Upon completion of the plant, however, the plant had to also overcome multiple failures of locally sourced PVC feed water pipe that disrupted the supply of feedwater to the plant. The client decided to consider the inclusion of energy recovery devices as part of their overall RO system to overcome the substantial energy cost investment for its new plant.

### The Solution

ERI's PX-220 Pressure Exchanger (PX) technology was the energy recovery solution of choice for the Cabo San Lucas plant. The design included 20 PX-220 devices, with four trains of five PX units each installed to aid in the production of 20,000 m<sup>3</sup>/day of fresh water. Also included was a provision for a sixth PX device on each rack to allow for future expansion of the plant.

### Cabo San Lucas Project Facts

- CAPACITY: 20,000 m<sup>3</sup>/day [5 MGD]
- 4 trains - 5,000 m<sup>3</sup>/day [1.3 MGD]
- 5 PX-220 PRESSURE EXCHANGERS PER SWRO TRAIN [One on standby]
- 95% EFFICIENCY GUARANTY
- PLANT STARTUP — APRIL 2007

*The Cabo San Lucas Desalination Plant provides municipal drinking water to approximately 40,000 local residents.*

## Cabo San Lucas SWRO Desalination Plant

In addition to PX equipment and to ensure the project's success, ERI provided commissioning assistance and control logic review as well as commissioning and startup assistance services. Because of piping blow outs, the PX devices were fed PVC debris on multiple occasions. However, no PX devices were damaged as a result.

Being the first full pressure-center plant equipped with PX technology, both the client and ERI learned valuable operational competence which enhanced the client's capability to provide affordable water. To further ensure customer satisfaction, ERI technical services managers made several on-site visits to get the plant up to two-thirds capacity, while local services contractors were also summoned for follow up work on commissioning. Overall, the plant was operational and producing water within three months of commissioning.

## The Result

The Cabo San Lucas Desalination Plant successfully produced potable water, providing an ample and reliable supply for residents and businesses in the area. In fact, Spanish contractor Inima was so pleased with the results that it plans to apply the PX Technology energy recovery solution for a large plant to be constructed in Spain in the near future.

**Energy Recovery, Inc. (ERI<sup>®</sup>)** is a leading manufacturer of energy recovery devices, which help make desalination affordable. ERI's PX Pressure Exchanger<sup>®</sup> technology (PX<sup>®</sup>) is a rotary positive displacement pump that recovers energy from the high-pressure waste stream of sea water reverse osmosis (SWRO) systems at up to 98% efficiency with no downtime or scheduled maintenance.

ERI has research, development and manufacturing facilities in the San Francisco technology corridor as well as direct sales offices and technical support centers in key desalination hubs such as Madrid, Dubai, Shanghai and Florida. ERI service representatives are based in Algeria, Australia, China, India, Korea, Mexico, Taiwan and the Caribbean.



One of four PX Pressure Exchanger trains with provision for a sixth PX for future expansion



The plant operates with a pressure center design



The plant is the largest in Mexico and provides municipal drinking water to approximately 40,000 local residents



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