



CASE STUDY

The Challenge

City's Industrial Progress Stalled without Water



LOCATION

Tianjin, China

PROJECT

Tianjin Dagang Seawater Desal Plant

CAPACITY

100,000 m³/day scaling to 150,000m³/d

ENERGY SAVINGS

US\$ 7.45 million or 74.5 million kWh/year*

CO2 SAVINGS

44,000 metric tons/year**

Limited water resources were holding back social and economic development in Tianjin, the largest industrial city in Northern China. An early adopter of desalination to meet municipal and industrial water needs, Tianjin sought to develop a massive desalination plant to enable a large, new industrial development. Building a water processing plant with an initial output of 100,000 m³/day and a future goal of expanding to 150,000 m³/day demanded seawater reverse osmosis (SWRO) technology that could efficiently desalinate and purify water.

* Energy savings estimates based on China's power cost of \$0.10/kWh

** Based on Energy Recovery's proprietary Power Model analysis



The Innovation Solution

PX Pressure Exchanger® 220

In collaboration with Hyflux Pte Ltd., Energy Recovery created a cost-effective solution that allows the new Tianjin Dagang SWRO plant to generate huge quantities of water for its industrial customers. Though they had used competitors' isobaric energy recovery devices in smaller installations, Hyflux built and commissioned the Tianjin plant to include the PX Pressure Exchanger® because the life cycle advantage to the PX® technology includes efficiency, durability, and a track record of being maintenance free. The installed PX solutions reduce the required pump output by 55%, recycling massive amounts of fluid and pressure flows into energy and cost savings for China's largest SWRO processing installation.

The Result

Industrial Success & Local Jobs from Efficient Water Desalination

From the beginning of operation, Tianjin Dagang's SWRO plant has achieved high efficiency and significant energy savings in excess of 74 million kWh each year (estimated). The PX trains are also reducing Tianjin SWRO's CO2 emissions by approximately 44,000 metric tons each year – an equivalent of taking nine cars off the road in the US for one year. An Energy Recovery team that completed a one-year check on the installed PX® trains found no measurable change in performance after a year of full capacity water production. Recycling energy from fluid flows to offer Tianjin a source of clean, reliable, affordable water has meant industrial development and the resulting economic benefits to the area are now more than possible - they are reality.

ENERGY RECOVERY IN CHINA

Massive Energy Savings, Serving the Greater Good.

750
MILLION kWh
SAVED
EACH YEAR

645
MILLION LITERS
PRODUCED
DAILY

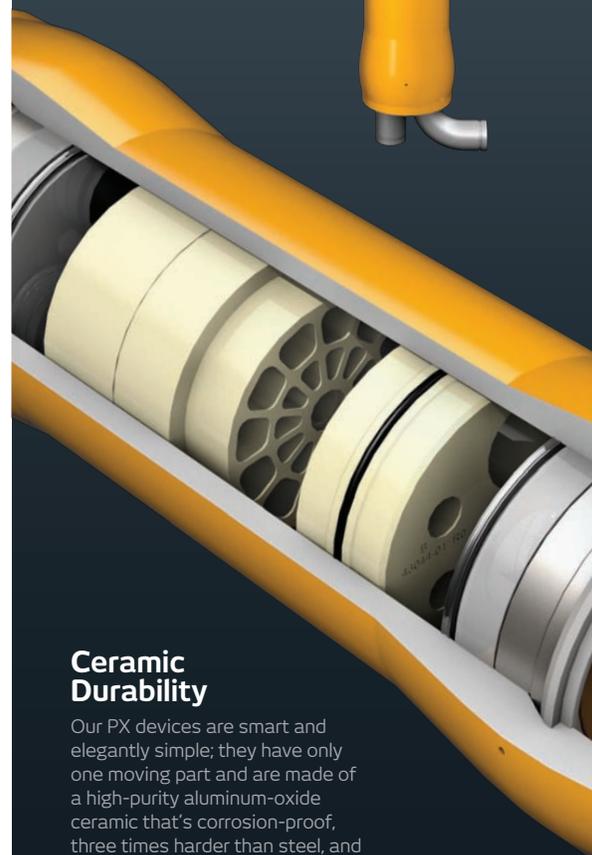
\$75
MILLION U.S.
SAVED
EACH YEAR

WHERE DESIGN MEETS ECONOMICS

After a quarter of a century, we're still raising the bar with innovative desalination solutions. Our flagship PX® isobaric technology is the most efficient and reliable solution on the market in energy recovery for desalination.

PX S Series®

- Designed for any size reverse osmosis desalination plant
- Delivers 96.8% efficiency
- Scalable solution



Ceramic Durability

Our PX devices are smart and elegantly simple; they have only one moving part and are made of a high-purity aluminum-oxide ceramic that's corrosion-proof, three times harder than steel, and provides unmatched durability.

About Energy Recovery Energy Recovery Inc. (NASDAQ: ERII) technology harvests the power of pressure from high-pressure fluid flows and pressure cycles. Through collaboration with industry, Energy Recovery helps make industrial processes within water, oil & gas, and chemical industries more profitable and environmentally sustainable. Headquartered in the San Francisco Bay Area, Energy Recovery has offices in Madrid, Shanghai, and Dubai. For more information, visit energyrecovery.com

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