HOW HAVE ENERGY RECOVERY DEVICES INFLUENCED SWRO* DESALINATION?

DESALINATION'S BEGINNINGS

ij

1970s

1990s

\$1.33

2004

\$0.70

2019

1950s

First demonstration of cellulose acetate film as a SWRO desalination membrane

1960s

Isobaric based "energy exchange engine" conceptualized for SWRO desalination applications¹

First spiral-wound membrane module by General Atomics

SWRO desalination system developed; 60 systems² installed globally over the decade

First thin film composite membrane developed by Cadotte; now the industry standard SWRO desalination membrane³

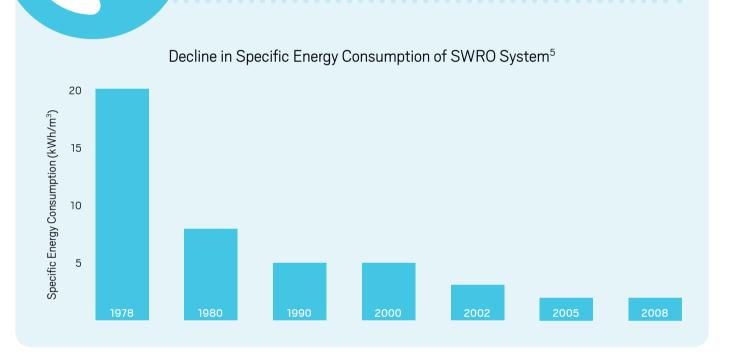
Pelton wheel modified to be applied to SWRO desalination² ERD** TECHNOLOGY INTRODUCED TO SWRO DESALINATION

Turbochargers developed for SWRO desalination applications First PX[®] Pressure Exchanger[®] installed in SWRO desalination plant in the Canary Islands

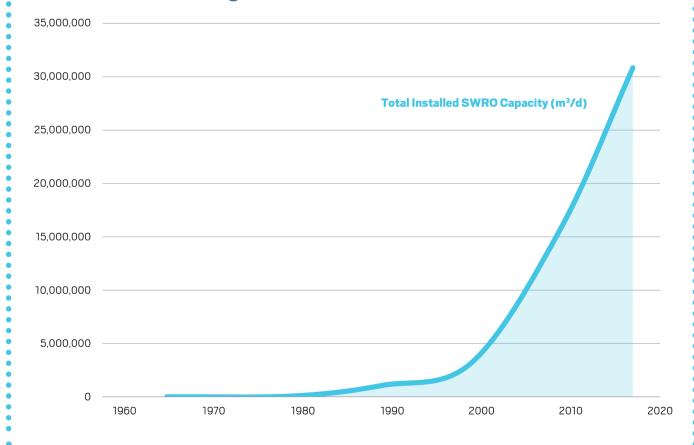
With the introduction of energy recovery devices, SWRO desalination costs decrease dramatically

~50% cost reduction since 2004

Average cost (USD) to produce 1,000 liters of fresh water in a large scale SWRO desalination plant⁴



Beginning in 2000, SWRO desalination capacity skyrockets, becoming the desalination method of choice



The future of desalination is SWRO thanks, in part, to the PX Pressure Exchanger



In 2019 Energy Recovery is celebrating 20,000 PXs shipped

PXs are found in SWRO desalination plants of all sizes across all 7 continents

~17M m³ of water is produced by SWRO desalination plants using PXs every day — 5 times the water consumed daily by the 8.6 million residents of New York City⁷







PXs reduce SWRO desalination energy costs by up to 60%***



Energy Recovery saves a combined US \$1.9B annually for customers***

SWRO desalination facilities using PXs produce enough fresh water to meet the daily consumption of 52M people***

* Seawater Reverse Osmosis | ** energy recovery device | *** Energy Recovery, Inc. estimates

Click here for footnotes 1–7