



E-affiliates Partnership Annual Meeting. The Energy –Water Nexus

November 11, 2016

John Webley

CEO



**At the crossroads in Rome
the Trevi Fountain was built,
providing fresh water
to a weary world.**



Trevi Systems - Intro

- Trevi Systems Inc. is a Petaluma, Calif. Research and Development organization focused on the Energy – Water Nexus.
- Trevi has patented 3 different water desalination technologies to reduce energy consumption in the desalination process:
 - A Thermally Driven Forward Osmosis System
 - An Osmotically assisted Reverse Osmosis System
 - An Energy Recovery Capacitive De-Ionization Technology



Lifecycle Cost of Water - 10MGD System



Combination Powered by Photovoltaic

- Example 38,000 m³/d (10 MGD) SWRO plant, 25 year PV costs:

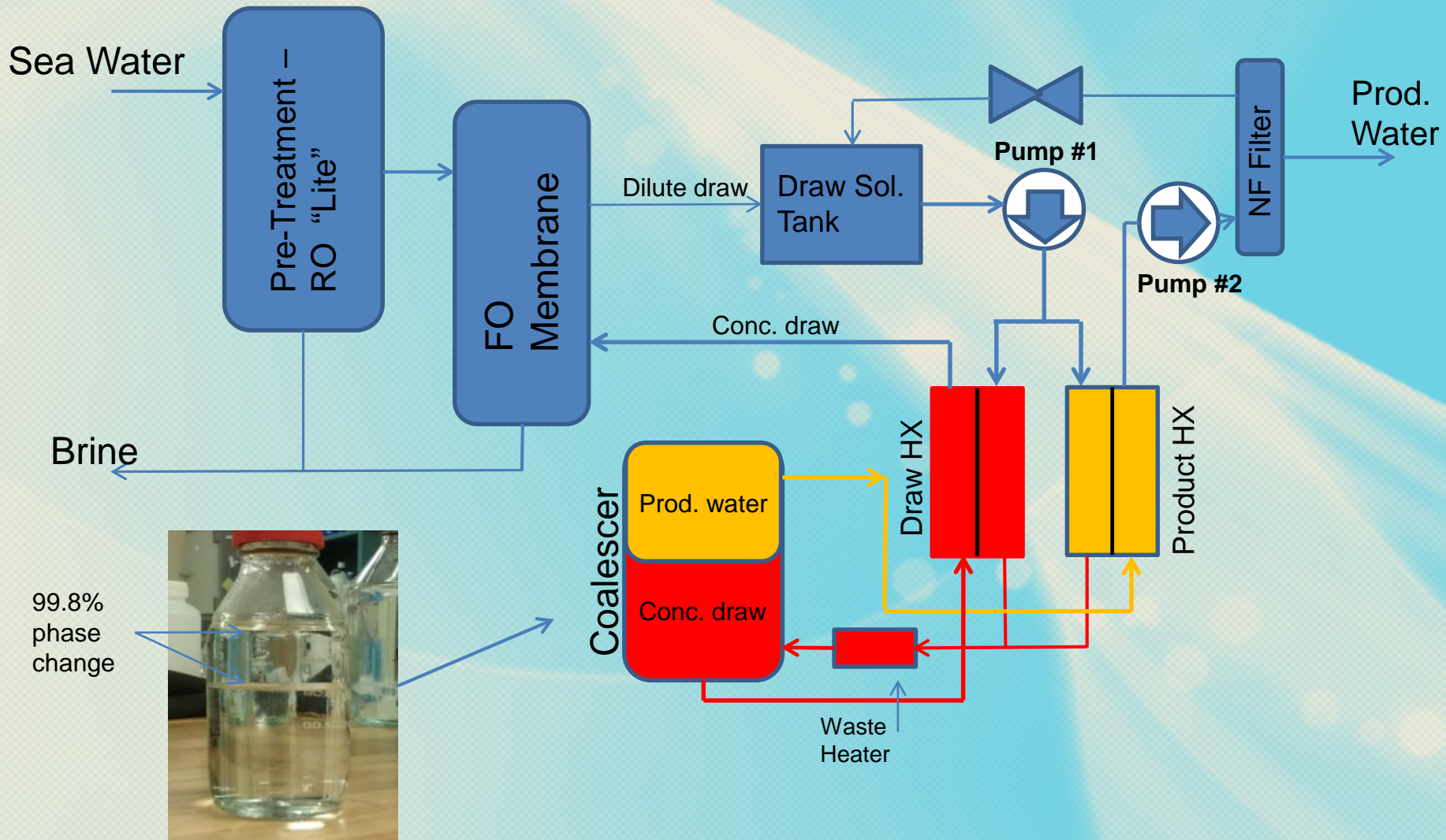
	Present Value	Cost per m ³ /d	Cost per m ³ (25 years)	Percent of Total
Desal	\$60,004,542	\$1,584	\$0.17	15%
OPEX	\$138,571,724	\$3,658	\$0.40	34%
Energy	\$214,096,027	\$5,652	\$0.62	52%
Total	\$412,672,293	\$10,894	\$1.19	100%

- The CAPEX for Energy production is half the total cost.
- Energy savings measures are easily cost-justified.
- A 6% increase in capital cost that reduced energy consumption by 5% would pay for itself in 3 years.

Notice the cost of energy as calculated by Masdar for a small 10MGD plant Trevi would be 1/4 of this energy consumption !!.



Trevi Thermal FO Process





Masdar Abu Dhabi, UAE



Award ceremony in Abu Dhabi



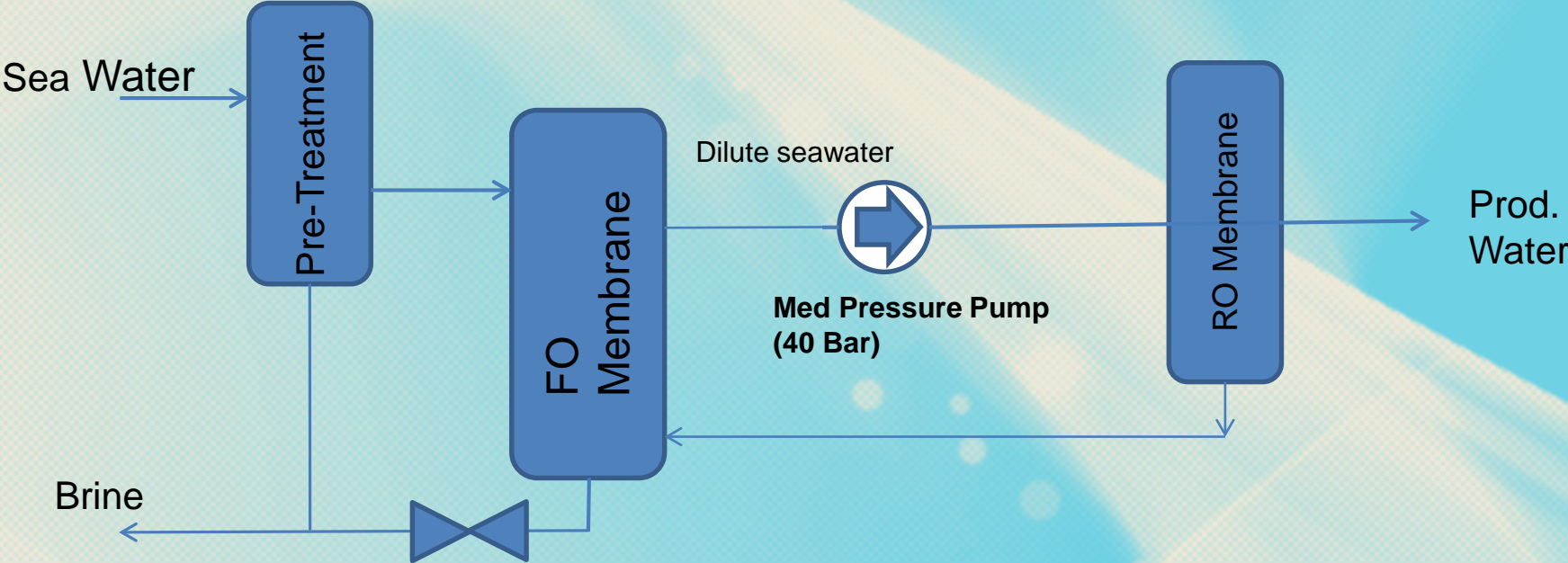
Trial site at Ghantoot



System in operation, producing WHO quality water at $<1.0\text{kWh}/\text{m}^3$.



Osmotically Assisted RO Process



Energy recovery in CDI

