

# Engineered Solar-Thermal Osmosis

A modular and efficient hybrid desalination technology

## Team

artistic solar

Georgia Tech.

BERKELEY LAB  
Lawrence Berkeley National Laboratory



Porifera

proionic

OLI systems, inc.

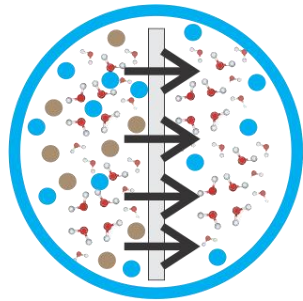
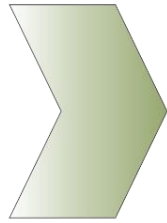
Southern Company



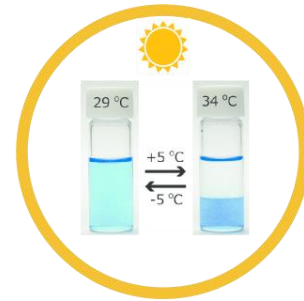
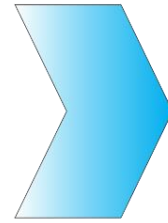
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The Future of Ocean Innovation



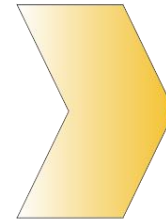
industrial discharge



engineered FO



solar heating

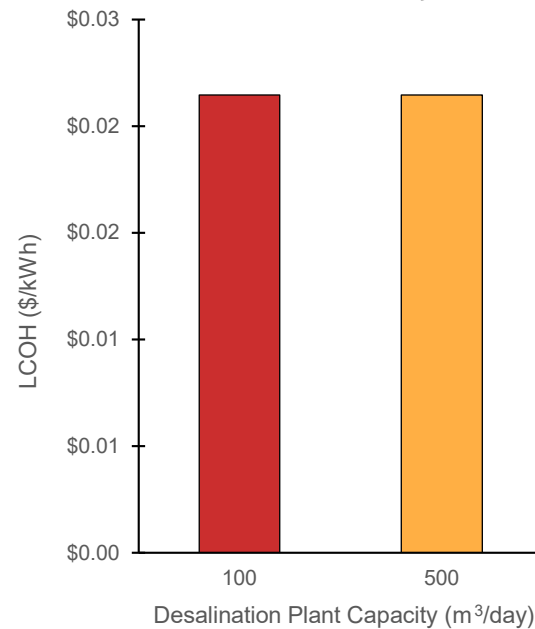


treated water

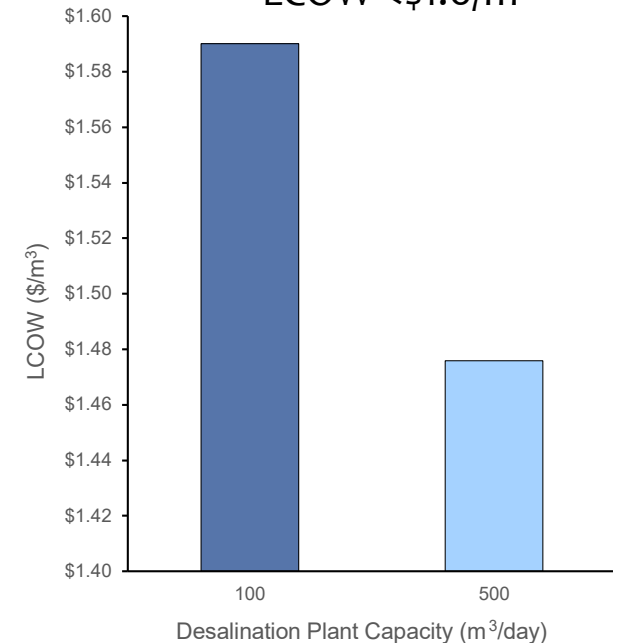
## System Components

- Solar-thermal collector efficiency >65%.
- Hybrid membrane-thermal desalination module that operates without applied pressure or thermal evaporation.
- Thermally responsive solvents that can be regenerated and minimize specific energy consumption.
- Thin film heat exchangers that are compact and efficient.

LCOH < \$0.025/kWh



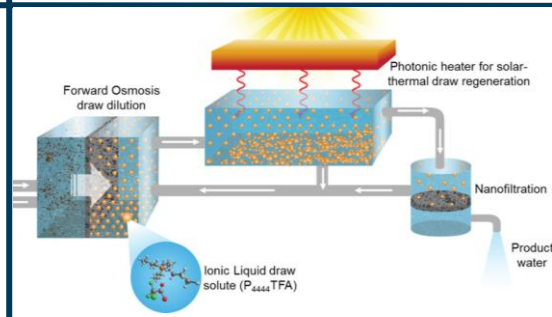
LCOW < \$1.6/m<sup>3</sup>



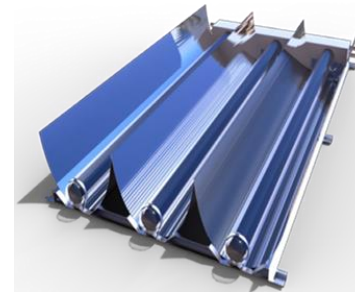




- ✓ A range of high salinity waters can be treated, expanding past the normal limitations of membrane-based separation technologies



- ✓ “Smart” draw solutions that draw water through membranes and respond to thermal stimuli for easy regeneration and reuse



- ✓ The XCPC collector and ray tracing model highlight the advantage of non-imaging optics for efficient sunlight collection.



99.97%  
pure  
water

- ✓ Energy and cost efficient
- ✓ LCOW  $\leq$  \$1/m<sup>3</sup>
- ✓ LCOH  $\leq$  \$0.015/m<sup>3</sup>