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Salinity Gradient Grid-Scale Energy Storage with Water Production

A new reverse osmosis configuration allows water management facilities to control water supply based on load, providing an economical, reliable, and energy-efficient solution for water production and energy storage.

Researchers at Purdue University have created a grid-scale salinity gradient for water production and energy storage. Desalination is the most energy intensive and costly step in the entire water production process, and there remains a need to create the supply necessary to meet the world's demand for drinking water. Currently, water systems operate at constant power, which is often wasteful and inefficient. Most facilities are not adapted for price fluctuations or seasonal changes as a result. By implementing new configurations for reverse osmosis in water management facilities, Purdue researchers were able to control water supply based on load. This approach, by splitting the recovery ratio of the feed into steps, can make RO both demand response capable and more energy efficient. In addition, this economical, reliable, and environmentally friendly solution is not limited by geographical or elevation constraints, unlike conventional plants.

Advantages

-Economical

-Reliable

-Ecofriendly

Potential Applications

-Water Production

-Energy Storage

-Renewable Energy

TRL: 4

Intellectual Property:

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Category

Energy & Power Systems/Grid Modernization & Smart Grids
Energy & Power Systems/Energy Storage
GreenTech/Water & Resource Management

Authors

Sandra Cordoba
David Elan Martin Warsinger

Further information

Dipak Narula
dnarula@prf.org

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