



AQUEOUS ENERGY STORAGE SYSTEMS WITH DESALINATION CAPABILITIES

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The Invention

UW-Madison researchers disclose a new aqueous rechargeable Na-ion battery (ARNB) system that can operate in seawater and achieve seawater desalination, which drastically increases the benefits offered by ARNBs, making them attractive candidates for energy storage systems. This new ARNB system combines the advantages of ARNBs and desalination batteries, rechargeable batteries composed of a Na-storage electrode and a Cl-storage electrode. The charging and discharging processes in desalination batteries are coupled with the removal and release of Na⁺ and Cl⁻. The output voltage generated by desalination batteries is lower than that of ARNBs because the chlorination potential of the Cl-storage electrode typically lies between the sodiation potentials of the two Na-storage electrodes chosen to maximize the output voltage of ARNBs. This new seawater ARNB was constructed to achieve a maximum output voltage during discharging by performing the charging process in two separate cells that use the desalination and salination reactions to store energy with a low input voltage. By using desalination as the charging reaction, desalination is essentially achieved with no extra energy.

Additional Information

For More Information About the Inventors

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Tech Fields

- [Clean Technology : Energy storage, delivery & resource efficiencies](#)
- [Clean Technology : Solar, wind & water technologies](#)

For current licensing status, please contact Jennifer Gottwald at jennifer@warf.org or 608-960-9854

