



Salgenx

desalx

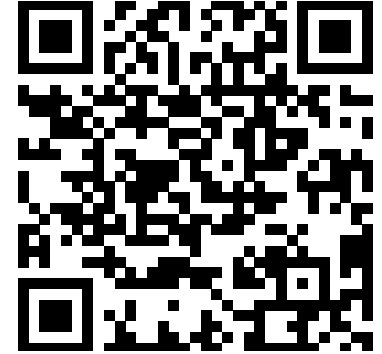
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Desalination

Structured Data



This webpage QR code

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Salgenx Desalination System for marine wind turbine generators and freshwater making on cruise ships and cargo ships or shore based reverse osmosis operations including military EABO expeditionary advanced base operations

PDF Version of the webpage (first pages)

Desalination from Brine and Seawater

The desalination system operates by using a saltwater flow battery cycle, which involves the movement of ions between two electrodes to store or discharge electricity without a membrane (which is typical with Vanadium or Bromine flow batteries). In this case, the process is used to remove salt from brine or seawater. The system can use a renewable energy source, such as solar power or large wind turbine, to charge the battery, making it both environmentally friendly and cost-effective.

This is very energy efficient since this happens simultaneously to the charging of the battery, so it is in effect a free side benefit of battery charging.

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Marine Vessel Applications

The technology can be used by cruise ships and cargo ships. A more novel approach is to use marine based wind turbine generators to provide power to the grid during demand hours, but then shift the direction of energy into a container based saltwater battery to hold the charge while simultaneously making desalinated water. The stored power can then be released into the grid when needed.

EABO

This type of system also has military implications, especially with EABO (expeditionary advanced base operations) where desalination is a better response than transporting in fresh water, or using expensive RO (reverse osmosis) systems.

Desalination Data

We are currently developing this application. If you charge the battery 1MWh, 1450kg of sodium ions are absorbed into the electrode material. Ocean seawater is about 3.5 percent by weight sodium chloride (NaCl). So you'd remove enough sodium chloride to completely desalinate 41.4m³ of ocean water during each charge. You would want to avoid going to 0% NaCl during charge to avoid diffusion limitations but the output stream could be easily 0.1 percent compared to 3.5 percent entry.

So overall it would be about 1.45kg per kWh charged. Meaning with ocean saltwater you could desalinate about 41.4L/kWh of the saltwater. You could then pump the low or no concentration water away and swap in saltwater for the discharge that is then released at double concentration (7 percent salt).

Alternative strategy is to use with a conventional brine output from a Reverse Osmosis system

Alternatively, you can use this system to use the brine from the discharge of a RO system.

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