Reduce Brine Generated by Operations

AtlantisTechnologies
Cost-effective Wastewater Desalination

The RDI™ Technology

Radial deionization – **RDI™** – is an improved and patented form of capacitive deionization (CDI) developed over the last 8 years. With the Atlantis RDI system, water is passed between two oppositely charged supercapacitors which removes the salt. Once full, the capacitor is switched and a low-volume, high-concentration brine is produced.

This desalination process is done at lower cost of ownership and higher clean water recovery than other CDI and reverse osmosis systems. Cylinders and system can be placed in parallel to increase volume or in series to process high salinity water. The system can also partially desalinate water (TDS shaving), further improving economics for applications such as cooling towers, waste discharge, etc.

Brine Reduction

Reducing brine volume from industrial discharge is a large opportunity for many companies in order to reclaim/reuse water, meet regulatory requirements, or reduce operating costs. One of the most common sources of brine is the reject from reverse osmosis systems.

Challenge

Brine discharges from industrial processes are typically complex, high salinity, and contain compounds that could foul current desalination systems such as organics, silica, and hardness. To treat this water with standard processes requires sophisticated pretreatment, high capital costs, and significant operating costs in energy and maintenance.

Solution

Using the Atlantis RDI to reduce the salinity can be an economical option. Because the salinity usually doesn't need to be reduced fully, the capital and operating costs can be lower than standard systems such as reverse osmosis and thermal. Also, the RDI can tolerate some of the foulants present, reducing the degree of pretreatment needed.

Core Applications

- Reverse osmosis reject
- Brine food, beverage, and other high salinity operations
- Brine from neutralization processes

Benefits

- Generate water for reuse
- Reduce disposal costs
- Reduce water footprint
- Meet future regulatory requirements
- Enable lower cost disposal options

Brine Reduction Examples

Corona, CA

Source: 5 gpm of 2,500 ppm RO reject from city water desalination.

Product water from RDI: 750 ppm for reuse within plant.

Brine reduction: 85%

Strathmerton, Australia

Source: 60 gpm of 1,500 ppm brine from milk washing station.

Product water from RDI: < 500 ppm for crop irrigation.

Brine reduction: 92%

Santiago, Chile - *pending*

Source: 1,425 gpm of 6,350 ppm brine from RO system

Product water from RDI: < 1,200 ppm for discharge

Brine reduction: 80%

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