



NEXED® ELECTRODIALYSIS REVERSAL (EDR) MODULES

APPLICATION BRIEF: SEQUENTIAL BATCH REACTOR (SBR) EFFLUENT

NEXED® modules evaluated against large scale inland brackish water reverse osmosis desalination plant

Municipal sequential batch reactor effluent that contains higher than acceptable salinity levels for discharge must be treated (desalted) to achieve compliance before release. Product water streams are also more readily available for inland water uses such as irrigation if approved.

With any desalination process involving bioactive wastewater, common costs associated with systems are CIP frequency, CIP agent costs, and system downtime.

A clear technology differentiator between brackish water reverse osmosis (BWRO) and electrodialysis reversal (EDR) comes with the tolerance of residual free chlorine. EDR can operate with a residual concentration of free chlorine to mitigate bio growth and obtain high wastewater recovery at reduced CIP frequency. This maximizes uptime and reduces maintenance costs.

Automatic controls are programmed using Evoqua's proprietary current algorithm for its NEXED modules. This continuously adjusts power applied to the modules to maintain product conductivity, without wasting additional power.

Site Location

North America

Full Treatment Requirement

1.6-3.4 MGD

Business Challenge

Demonstrate increased water recovery and meet TDS target to determine impacts on OPEX and desalination equipment CAPEX.

Keys to Success

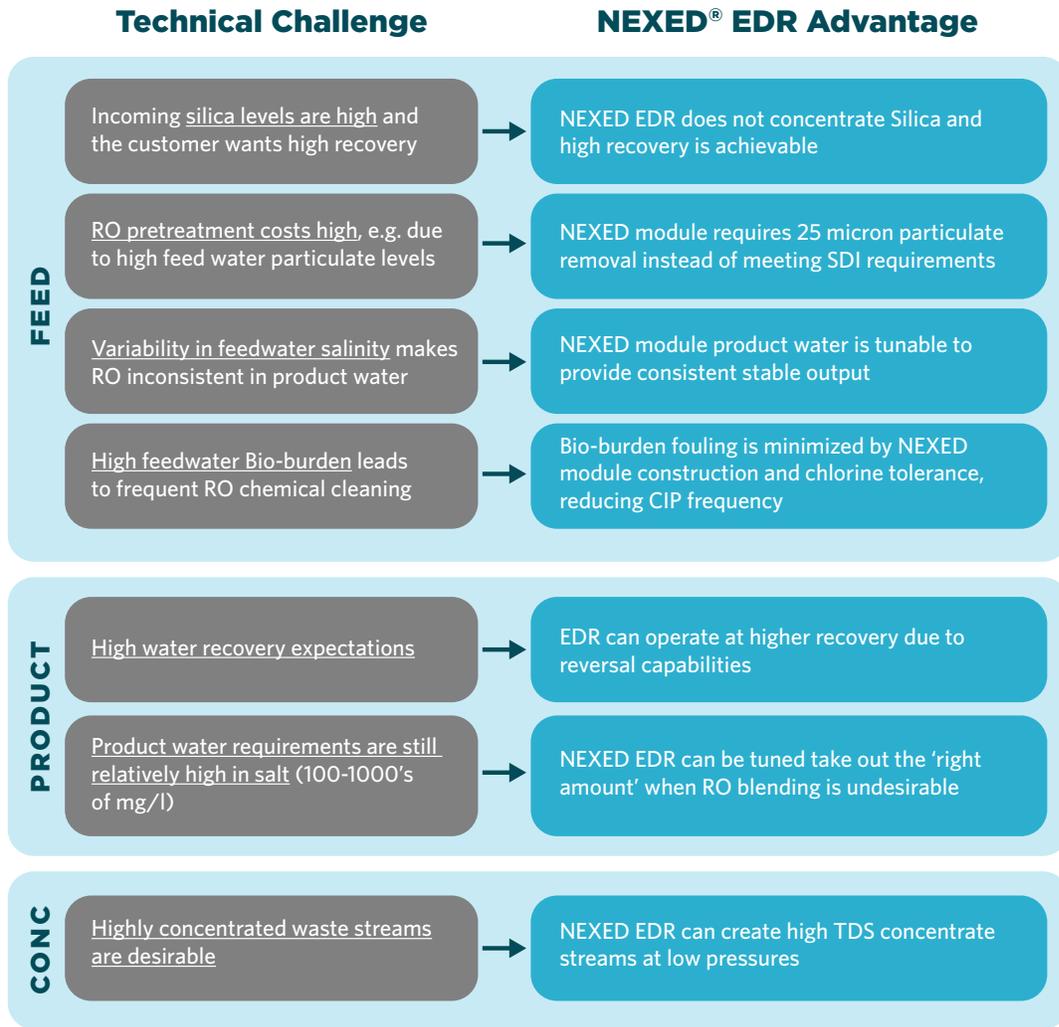
Simplified pretreatment for EDR vs. UF/RO allowed for higher overall recovery. Chlorine tolerance for EDR allowed for less frequent CIP cycles.

Results

Microbial and organics level mandates UF pretreatment to RO limiting overall system recovery to <80 %. NEXED EDR operated at 85% with increased uptime.



Key Applications: RO reject recovery, brackish water, cooling tower, and brackish wastewater



NEXED MODULES OPERATE WHERE RO SYSTEMS ARE CHALLENGED

Many applications favor the capabilities of NEXED modules such as applications with high silica, variable feeds, high bioburdens, and those that tend to foul reverse osmosis systems. More commonly treating these problematic water sources for water reuse or challenging brackish feeds are necessary to meet water-optimization goals.



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