

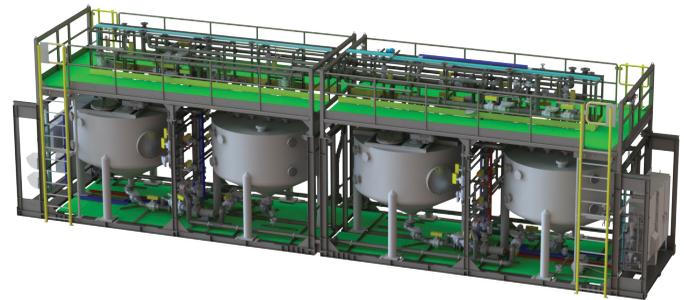
BrineRefine

Modular Chemical Reactors for Industrial Water + Lithium

- A versatile continuous stirred tank reactor (CSTR): compact, modular and expandable
- Single package with precision dosing and intelligent controls that communicates up- and downstream for total process optimization
- Pair with RO: chemical softening removes scaling ions, increasing downstream freshwater recovery
- Target ions of concern: avoid over-treatment by targeting troublesome ions for precipitation and filtration
- Remove impurities in lithium brines or precipitate refined, >99.9% purity lithium carbonate (Li_2CO_3)
- Combine with clarifiers, XtremeUF ultrafiltration, filter press, centrifuge, or use slurry discharge as project requires



2 x BrineRefine - 15. Fully Modular Plant



Versatile Continuous Stirred Tank Reactor

Execute chemical reactions: stirred, staged, and with optional heating/cooling. Programmable logic controller (PLC) integrates with external process control.

Modular, Scalable, Adaptable Packages

Repeatable blocks with all required equipment onboard: reactors, mixers, process and automation. Built-in chemical dosing automation adjusts to variability in process or chemistry.

Built for Corrosive Applications

Engineered, plastic wetted parts: CPVC pipework, chemically resistant glass-reinforced fiber vessels, corrosion-resistant mixers.

Cost-Effective Ion Targeting

Target ions of concern for precipitation and filtration, avoiding over-treatment; examples include fluorides, phosphates, sulfates, cyanide, hardness, metals, silica.

Maximize RO Recovery

Remove scaling ions. Maximize membrane system recovery up to osmotic pressure limits. Partner with XtremeUF for RO-safe solids management.

Lithium Carbonate Reactor & Wash

Achieve battery-grade lithium carbonate production with built-in wash and water/carbonate recycling system.

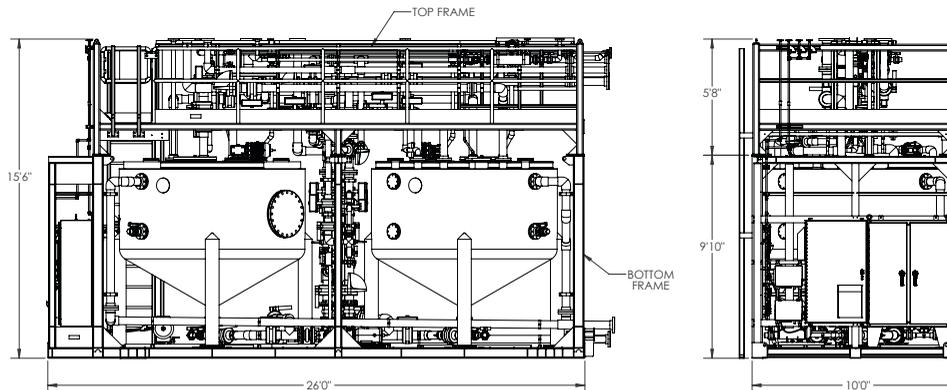
Specifications

Inlet Water Spec	Vast flexibility; contact Saltworks
Chemicals	Dependent on water chemistry; contact Saltworks
Electrical Energy	~2 kWh/m ³ (50 kW)
Power	Standard: 480 VAC, 3-phase, 60 Hz Options: matched to site needs
Solids Management	Filter press, centrifuge, or other

	BrineRefine - 15 <i>Fully Modular Reactor Skids</i>	BrineRefine - 48 <i>Site Installed Reactors + BOP Module</i>
Design	<ul style="list-style-type: none"> Modularized 2 x 7.5 m³ = 15 m³ reactors per frame Balance of plant and controls on-board reactor skids (one package) 	<ul style="list-style-type: none"> Pump skids and control modules skid mounted. Separate modules 2 x 24 m³ = 48 m³ reactors (site installed)

Add units in series or parallel to meet capacity and reaction time needs.
Increase capacity by adding N modules.

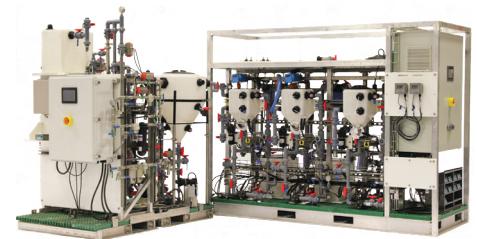
Nominal Flow Capacity (@ 20 min reaction time)	N x 1,080 m ³ /day N x 198 GPM	N x 3,456 m ³ /day N x 634 GPM
Reactor Size	N x 15 m ³ per frame N x 4,000 gal	N x 24 m ³ per field installed reactor N x 6,400 gal



One BrineRefine - 15 module. Add modules to increase capacity or upgrade to a BrineRefine - 48

Automation

- Programmable logic controller (PLC) control of reaction sequences
- Precision chemical dosing control
- Built-in flush and smart slurry management
- Auto start-up, capacity ramp, hibernate, shut down
- Maximizes uptime with minimized operator intervention
- Communicates with upstream and downstream process assets to maximize system performance
- Ability to bypass a reactor for maintenance while running
- Representative BrineRefine pilot and testing unit available



BrineRefine pilot and testing unit

Delivery Models

Saltworks delivers complete industrial wastewater treatment or “concentrate, refine and convert” lithium refining packages, or works with engineering companies and other vendors to deliver a partnered project.