POWER UP SUCCESS STORY

Scaling Lithium Production with Complete Water Recovery

The Challenge

In Chile, where the global energy transition converges with one of the world's most water-scarce regions, an emerging lithium site owner, operator, and technology innovator faced a pivotal challenge: how to scale production without deepening pressure on limited freshwater resources. The opportunity for growth was clear—but so was the responsibility to pursue it sustainably. Under increasing regulatory and community oversight, the client needed to develop a flowsheet that maximized output while radically improving water efficiency. alkaLi was the partner of choice to design and deliver the solution.

The Solution

Not knowing how to handle brine from their raffinate stream, the client turned to alkaLi to provide a solution to return as much water as possible for their direct lithium extraction (DLE) process. Conventional high-pressure reverse osmosis (RO) systems and thermal evaporation systems require high capital costs, energy use, or both, to recover sufficient water to meet the client's production needs. alkaLi's EC^2 technology, powered by Gradiant's Counter-Flow Reverse Osmosis (CFRO) technology, treated the water at 15,000 mg/l TDS and concentrate up to 225,000 mg/l, returning over 90% freshwater for production needs.

The Benefits

alkaLi's Concentrate technology empowered the client to outperform across all its KPIs—cutting water procurement costs, shrinking infrastructure needs, and achieving compliance with greater efficiency and a lower environmental footprint. The client now uses 100% of the recovered freshwater for production – and plans to deploy the Concentrate technology in upcoming expansion efforts.

Fast Facts

Location:	Chile
End-User:	Leading Lithium Producer
Solution:	Freshwater Recovery from DLE Brine
Industry:	Resource Recovery of Lithium
Feedwater Source:	Raffinate from DLE Process
Technology:	alkaLi EC^2, featuring CFRO
System Configuration:	Single Train, Multi-Stage
Commissioning Date:	Q4 2024
Delivery Model:	Technology Lease

>90%
Freshwater recovery from DLE waste stream

100%
of DLE process requirements met through water reuse

Up to
40%
CAPEX and OPEX savings vs alternative technologies

Document No. A100-004-01-EN
June 2025

Contact alkaLi today at **powerup@alkaLi3.com**

alkali3.com