

# Unlocking lithium through sustainable, efficient brine concentration

alkaLi's new solution, in partnership with a leading U.S. energy company, enables a sustainable lithium extraction process with a reduced time-to-market and environmental footprint. EC<sup>2</sup> technology integrates into the client's process, enabling up to 15x lithium concentration in a fraction of the time versus conventional methods. This approach also cuts carbon emissions, energy use, and capital costs when compared to traditional thermal technologies. The novel solution is applicable to both new and existing lithium extraction sites, opening new possibilities in untapped regions.

## The Challenge

The surge in global demand for lithium, driven by electric vehicles and energy storage, challenges producers to find sustainable technologies. alkaLi's client developed a direct lithium extraction (DLE) process, with Gradiant's technology concentrating lithium and generating fresh water in a resource challenged environment. Now deployed at the client's Nevada site, this solution sets a new standard for sustainable lithium production.

## The Solution

DLE extracts lithium from saline brines through processes like ion exchange and membrane separation. alkaLi's Concentrate process, part of its proprietary EC<sup>2</sup> technology stack, uses RO Infinity with CFRO to concentrate lithium up to 15x, maximizing efficiency. Integrated into the client's flowsheet, the system reduces evaporator size and cost by operating at standard RO pressures. At the same time, a second CFRO system produces fresh water from the DLE waste stream, reducing groundwater use at the remote site.

## The Benefits

alkaLi's Concentrate solution accelerates lithium extraction, reducing time-to-market and environmental footprint. It delivers rapid lithium concentration while lowering emissions, energy use, and capital costs compared to traditional methods. RO Infinity minimizes the need for downstream evaporators or ZLD systems, making it adaptable to both new and existing extraction sites.

## Fast Facts

<b>Location:</b>	Clayton Valley, Nevada, USA
<b>End-User:</b>	Leading U.S. Energy Company
<b>Solution:</b>	Lithium Concentration
<b>Industry:</b>	Resource Recovery of Lithium
<b>Feedwater Source:</b>	Subsurface Brine
<b>Technology:</b>	alkaLi EC <sup>2</sup> , RO Infinity with CFRO
<b>System Configuration:</b>	Single Train, Multi-Stage
<b>Commissioning Date:</b>	2023
<b>Delivery Model:</b>	Design-Build (DB), Operate & Maintain (O&M)

Up to  
**15x**  
concentration factor

**>50%**  
cost savings vs traditional technologies

**100%**  
of water needs met for DLE process through reuse