

# SOLUTIONS FOR THE MINING INDUSTRY

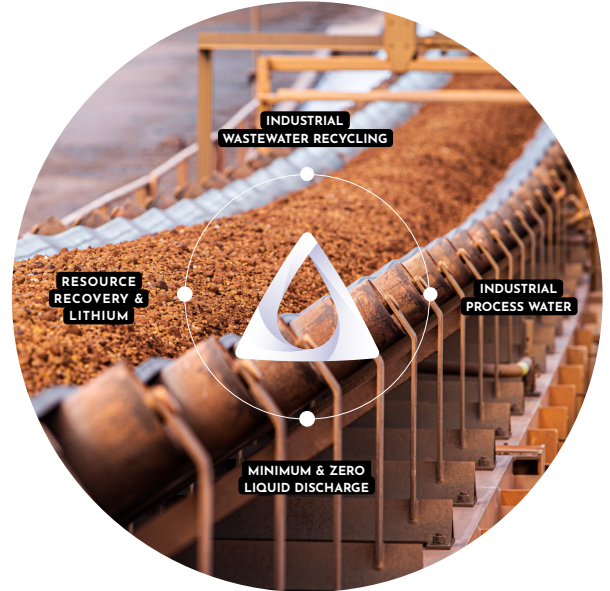
As a global solutions provider for advanced water and wastewater treatment, Gradiant's solutions help the mining industry recover valuable metals and reduce water and carbon footprints. We enable the sustainable production of high-purity lithium and battery materials for EV battery manufacturing and recycling.

## MINING

Mining is essential to produce the critical raw materials used in the world's consumer and industrial products — from batteries to home building materials. These mines demand sustainable, efficient, and cost-effective water management.

Mining operations are highly complex and increasingly water-intensive with many projects located in arid regions with limited access to water, subject to ever more stringent discharge requirements. We have developed a deep understanding of this complex industrial sector and the challenges it faces.

Gradiant offers an extensive range of solutions for the complete mining life cycle. From freshwater supply wastewater reuse, often in remote locations, to advanced treatment and extraction in preparation for processing. Our innovative brine mining processes concentrate lean liquors and transform waste into new mineral resources.



### WE HAVE PROVEN KNOW-HOW TO:

- 1 Yield the High Value End-Product the Industry Demands**
- 2 Efficiently Process Lower Ore Grades**
- 3 Customize Solutions for Complex Process Streams**
- 4 Ensure Environmental Discharge Compliance**
- 5 Design and Operate Facilities in Remote Locations**

## RESOURCE RECOVERY OF LITHIUM & CRITICAL MINERALS

Extracting lithium and other high-demand, valuable resources from brine deposits require advanced and highly efficient metal recovery technologies. Traditional methods have relied on inefficient solar evaporation ponds to concentrate lithium — requiring enormous areas of land and great patience given that processing times can take years.

Direct Lithium Extraction (DLE) and production is a breakthrough process that yields lithium with far greater efficiency by an integrated flowsheet that includes absorption, ion exchange, solvent extraction, and membranes.

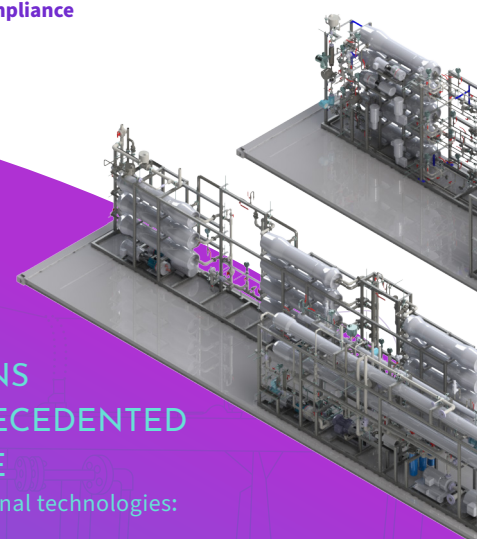
Gradiant offers solutions that enhance the sustainable production of battery-grade lithium compounds using our **RO Infinity (ROI)** with CFRO and **Carrier Gas Extraction (CGE)** technologies, powered by **SmartOps** digital solutions – an integrated platform for performance optimization and asset management.

Beyond lithium, Gradiant technologies are proven commercially in the sustainable production and recovery of other valuable metals, including nickel, cobalt, graphite, and uranium.

## OUR SOLUTIONS ENABLE UNPRECEDENTED PERFORMANCE

compared to conventional technologies:

-  **High Concentrations of Lithium in a Fraction of the Time**
-  **Reduced Water and Carbon Footprints**
-  **Lower Capital and Operational Costs**
-  **Flexibility for Integration into Existing Lithium Extraction and Production Sites**
-  **Opportunity to Open Untapped Lithium Production Regions Previously Not Viable**



# GRADIANT'S RO INFINITY WITH CFRO

Many of today's water and wastewaters cannot be efficiently treated with conventional membrane or thermal technologies. Gradiant has developed RO Infinity, an advanced platform of membrane-based solutions for complex water and wastewater challenges, that combines our patented CFRO technology with innovative reverse osmosis (RO) membrane processes. ROI solutions enable customers around the world to achieve desalination, brine concentration, brine mining, and sustainability goals.

RO Infinity systems are built with commercially available membranes and components for low-cost and easy maintenance. These units are designed and assembled in modular form factors with proprietary process and control technologies and backed by one of the most experienced engineering and service teams in the industry.



## BENEFITS OF RO INFINITY



### Minimum Liquid Discharge (MLD)

Recovers up to 99% final brine concentrations to the saturation limits of salt (TDS up to 260,000 mg/L NaCl). This reduces the required capacity of downstream ZLD systems with cost savings of 60% versus thermal systems.



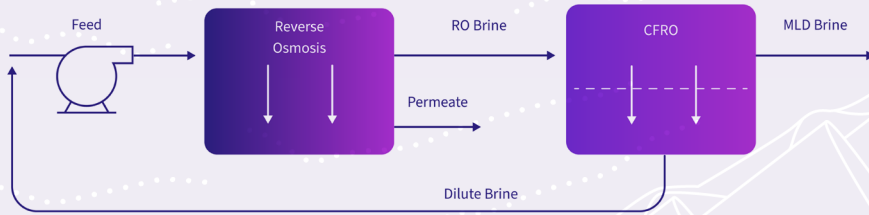
### Maximize Production

Extract more fresh water, recover higher concentrations of valuable resources, and minimize waste disposal — all at lower pressures and energy usage which reduces the total water cost.



### Maximize System Availability

RO Infinity systems are intelligent, adjusting for varying feedwater and operating conditions to tolerate highly variable feedwater quality, and experience less fouling and scaling than conventional systems.



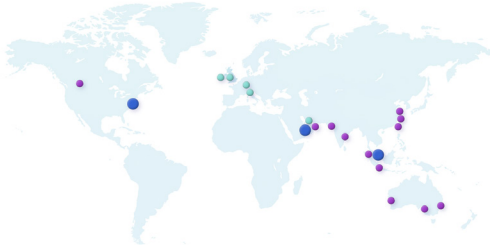
PFD of RO Infinity for Brine Concentration and MLD



RO Infinity for SLB's direct lithium extraction site

## CONTACT US

Gradiant serves its clients around the world from our global headquarters in Boston, regional headquarters and Global Innovation Centers in Singapore and Abu Dhabi, and offices located in 18 countries.



### Corporate Headquarters

**Boston – Massachusetts**  
130 New Boston St., Suite 200  
Woburn, MA 01801  
Phone: +1 (781) 819 5034

### Regional Headquarters & Global Innovation Centers

**Singapore**  
1 Cleantech Loop, #03-04/05  
Cleantech Park One,  
Singapore 637141  
Phone: +65 6958 6930

**Abu Dhabi - UAE**  
Office C-303, Third Floor  
Block C, Abu Dhabi Business Hub  
ICAD-1, Musaffah  
Abu Dhabi, UAE

Have a question? Contact us at:  
[gradiant.com/contact](https://www.gradiant.com/contact)

This document is for general information only. No warranty or guarantee whatsoever is given or implied and Gradiant is not bound by or liable for or by the information contained herein. Customer has the sole responsibility to determine whether the information in this document are appropriate for Customer's use, including without limitation actual site, geographical, and plant conditions, specifications, requirements, disposal, applicable laws and regulations. This document is the intellectual property of Gradiant, including but not limited to any patent or trademark contained in this document. Distribution of this document is not and does not imply any transfer of Gradiant's intellectual property. Trademark Notice: Gradiant, the Gradiant Logos, and all trademarks and services marks denoted with TM or ® are owned by affiliates of Gradiant Corporation and Gradiant International Holdings unless otherwise noted.

Copyright Notice © 2024 Gradiant



Document No. 300-003-02-EN  
January 2024



[www.gradiant.com](https://www.gradiant.com)