



GO2L⚡THIUM

LB Lithium Bank

Continuous Direct Lithium Extraction cDLE®

Peter Voigt, CTO G2L

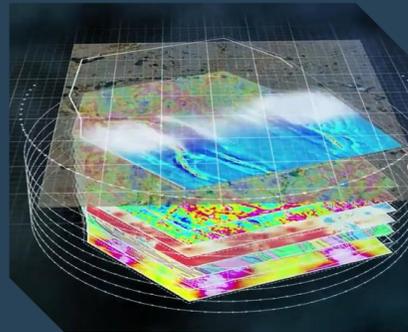


Brought to you by

GO2LITHIUM



World's leading Direct Lithium Extraction technology with proven pathway to full-scale commercial plant



Leader in subsurface mapping, utilizing proprietary algorithms & AI to find lithium brines. Ivanhoe Electric subsidiary



Developing the Largest Portfolio of Unconventional Direct Brine Lithium Projects in North America

Value generation

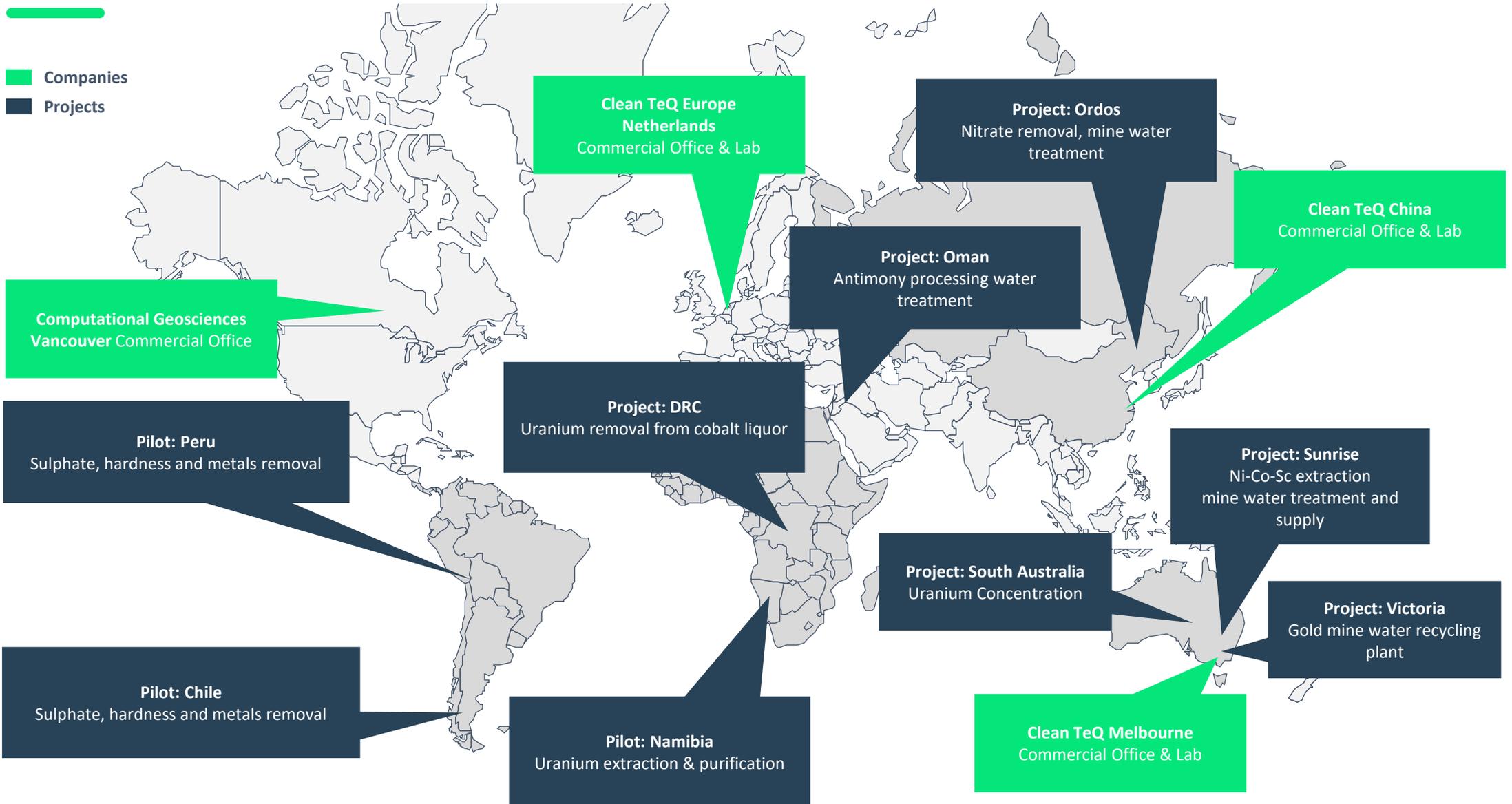
Partnering in a company that provides access to one of the largest lithium assets in Northern America

Unlocking value through demonstrated technology delivered now



Go2Lithium Inc and LithiumBank Resources Corp Partnering to Develop North American Lithium Assets

Our Footprint



Why DLE?

Compared to hard rock mining and solar evaporation



SIMPLE PROCESS



BETTER LITHIUM
RECOVERY



FASTER PRODUCTION
RATES



LESS LAND AREA



LESS WATER INPUT



LESS GREENHOUSE GAS
(GHG) EMISSIONS

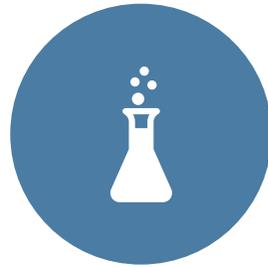


LESS TIME TO
PRODUCTION

DLE Challenges



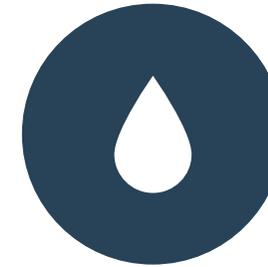
LITHIUM LOADING CAPACITY
LOW LOADING REDUCES
ECONOMIC VIABILITY



ELEMENTAL SELECTIVITY
POOR SELECTIVITY INCREASES
LOADS TO THE REFINERY



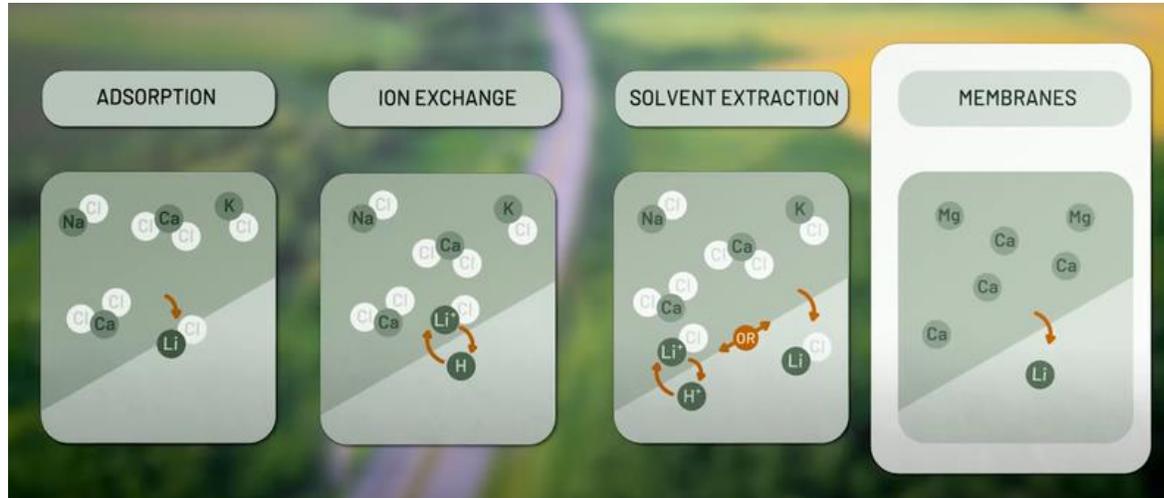
SPECIALTY REAGENTS
INCREASES COST AND PROCESS
COMPLEXITY



WATER
HIGH WATER USE INCREASES
COST ENERGY AND CSG IMPACT

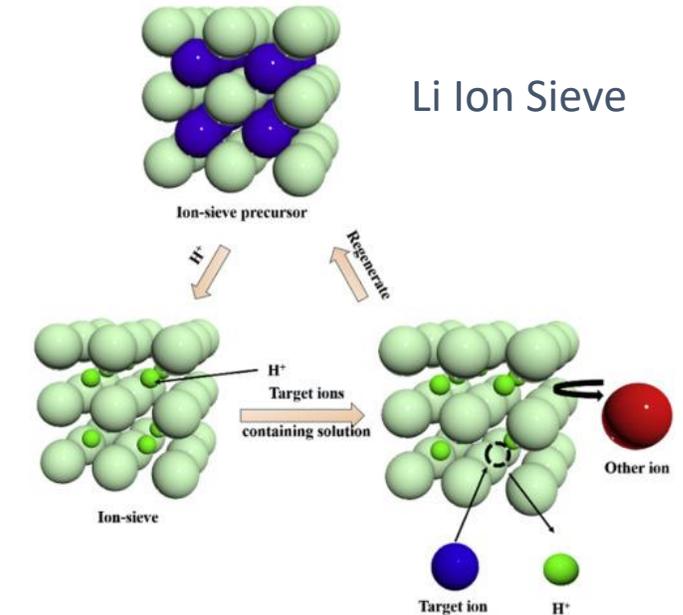
OUR CONTINUOUS DLE (cDLE[®]) TECHNOLOGY OVERCOMES THESE CHALLENGES

LithiumBank cDLE[®]



Options:

- Adsorption
- **Ion Exchange (Li Ion Sieve)**
- Solvent Extraction
- Membranes



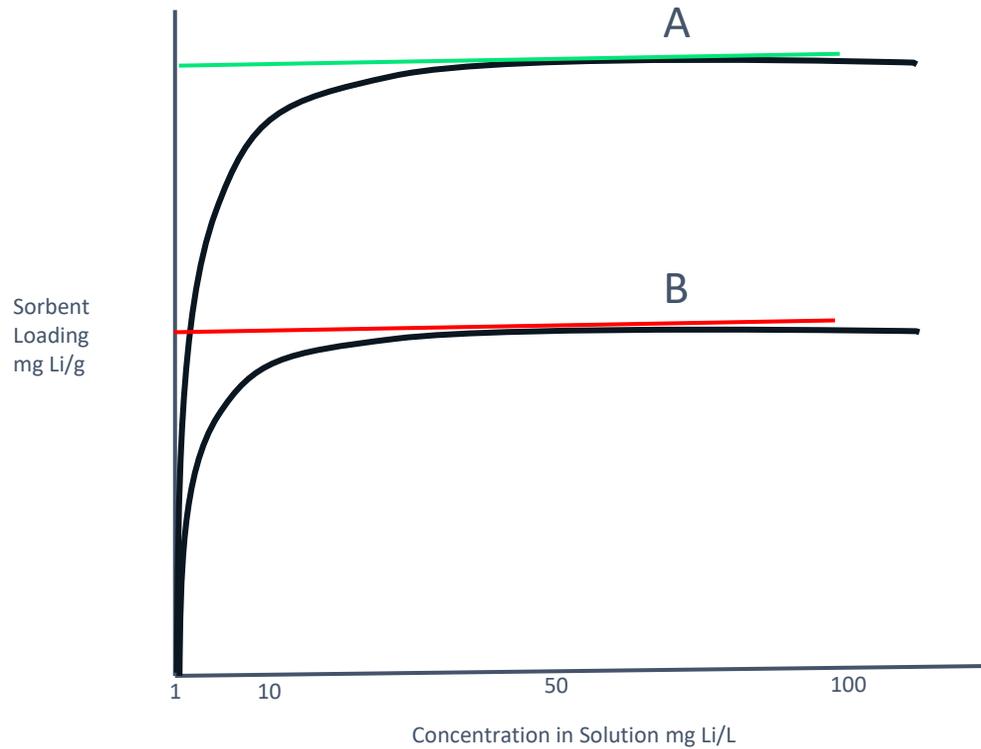
Important Sorbent Parameters:

- Loading capacity
- Selectivity
- Sorption kinetics
- Desorption chemistry
- Desorption kinetics

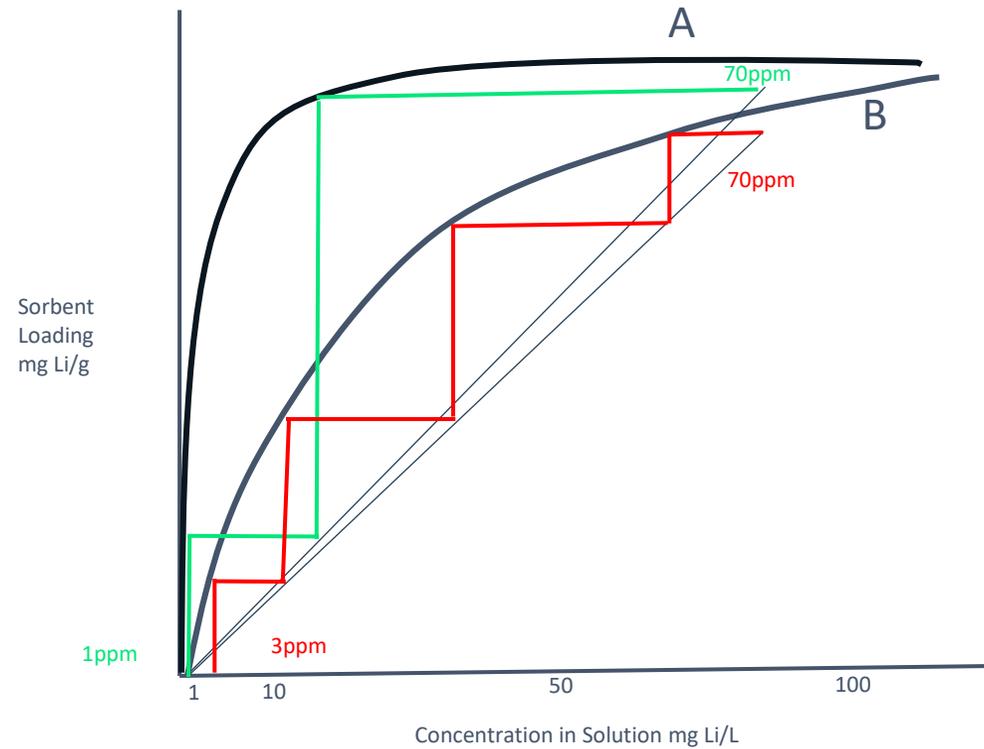
Sorbent characteristics



R- ion exchange sorbent



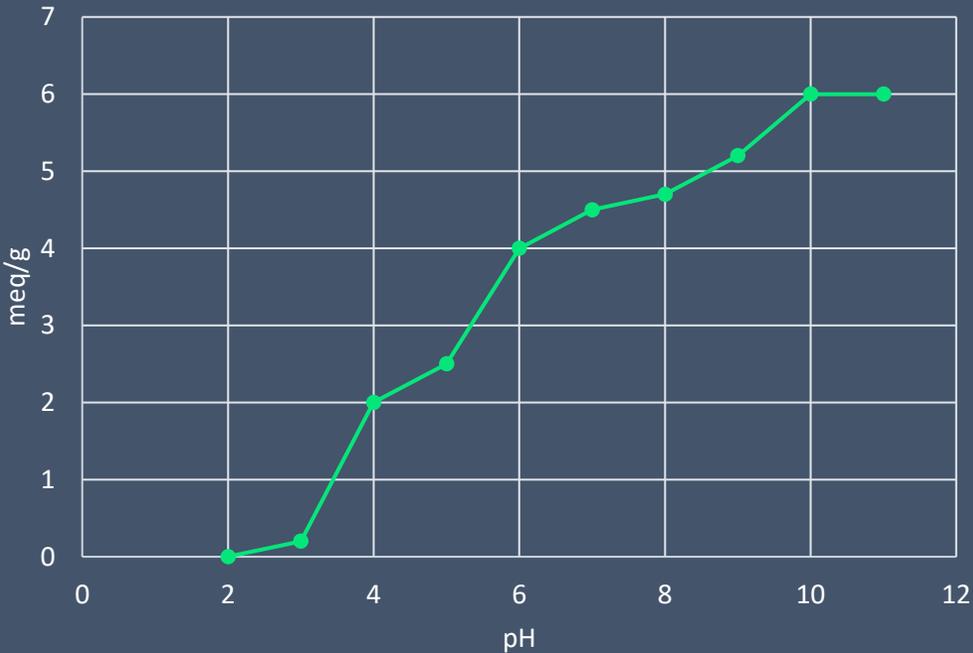
A is better than B



A is better than B

Sorbent characteristics

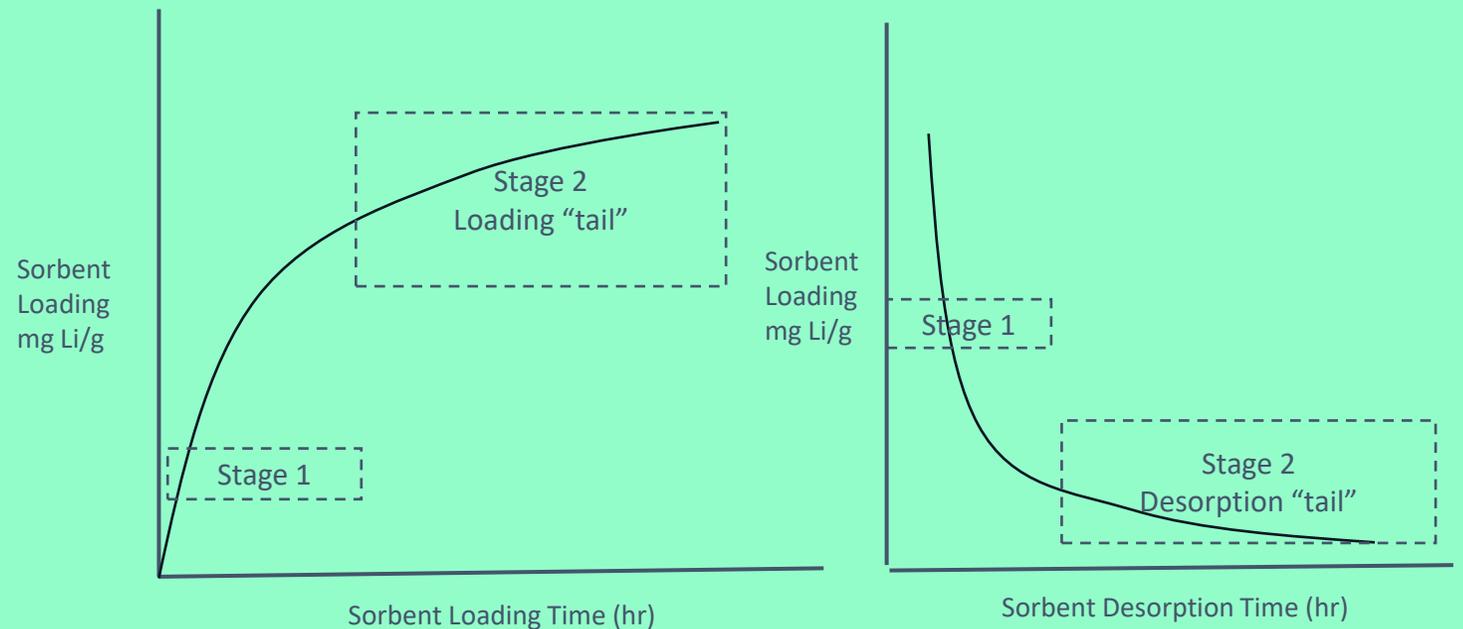
pH v's Loading Capacity



Maintain pH during sorption to achieve best loading capacity

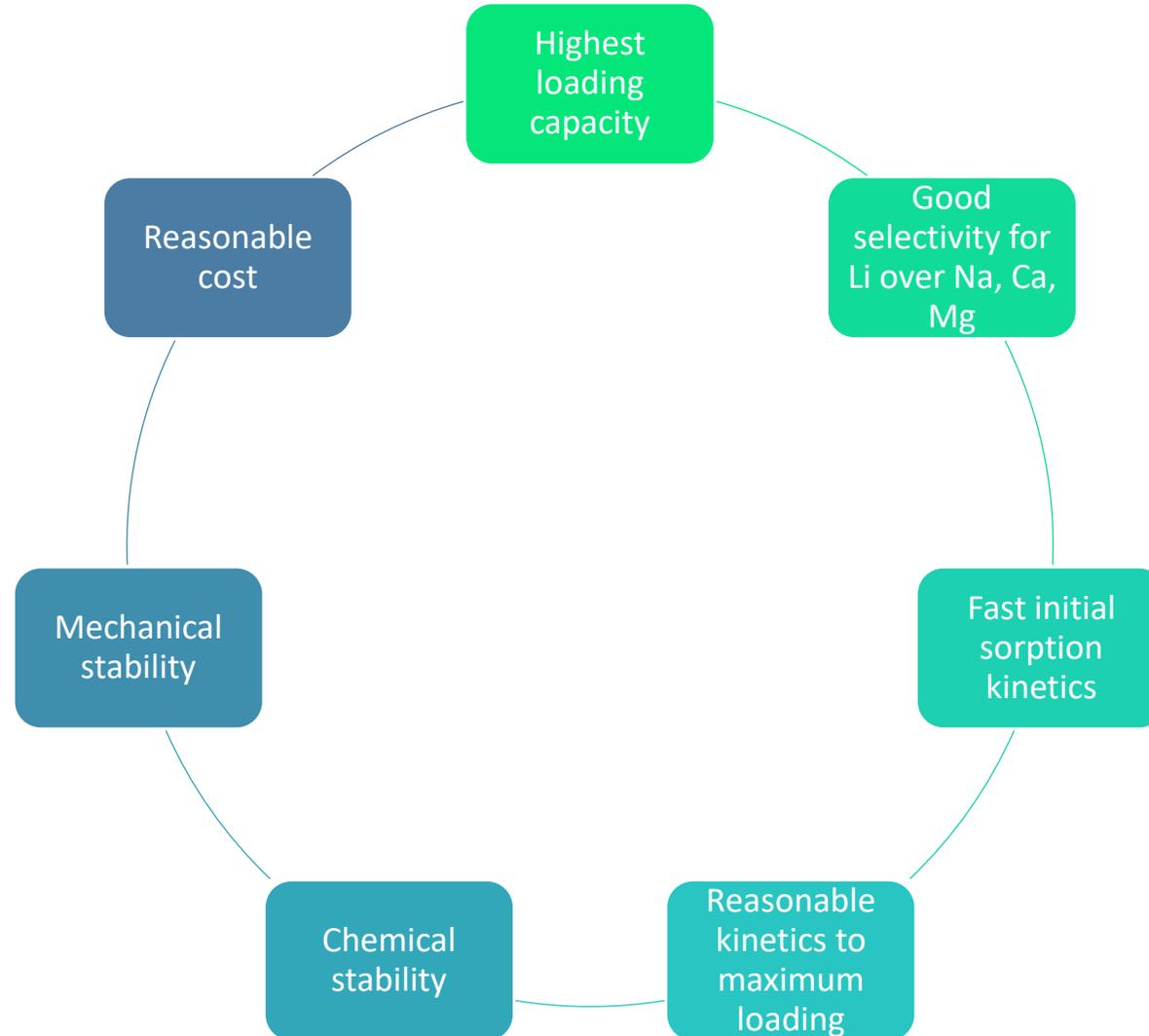


R- ion exchange sorbent

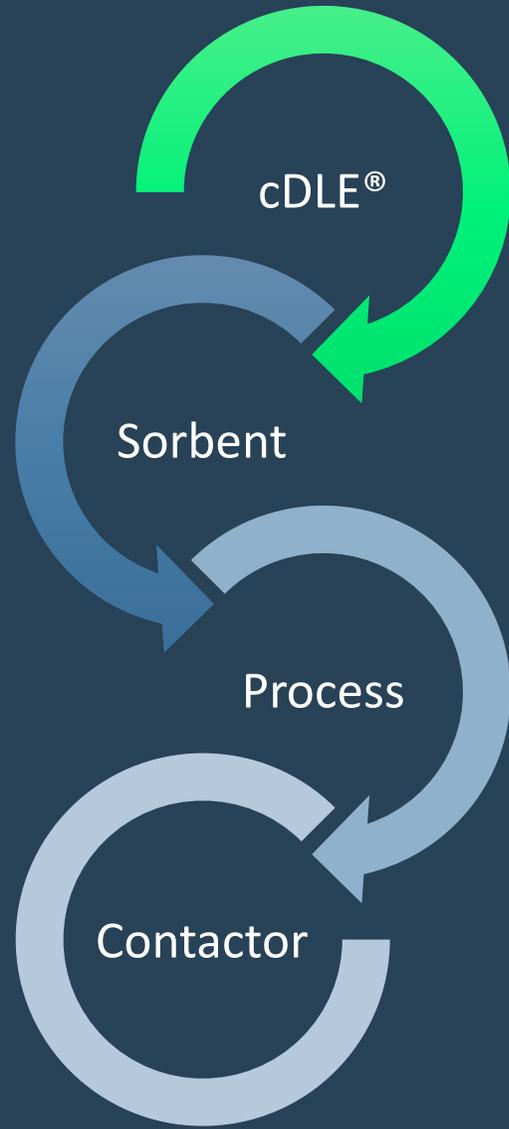


Time to max loading and full stripping which determines the residence time for the sorbent in process

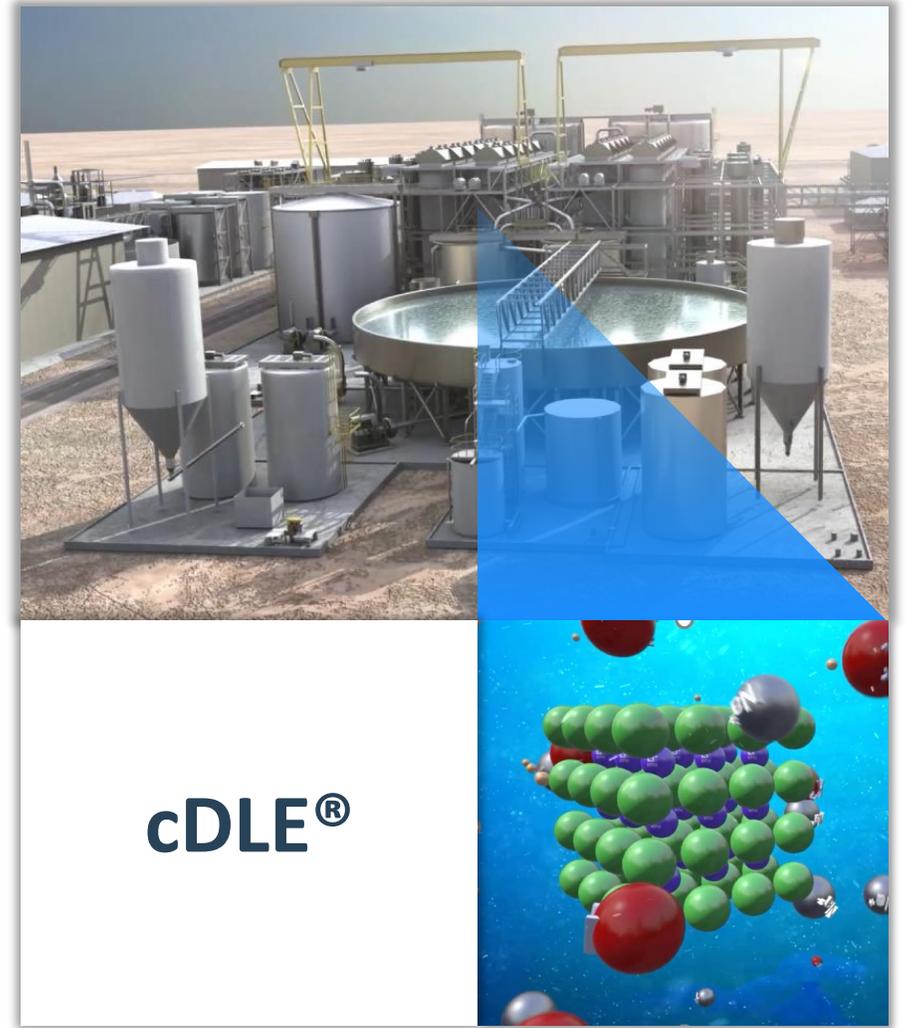
Sorbent specifications



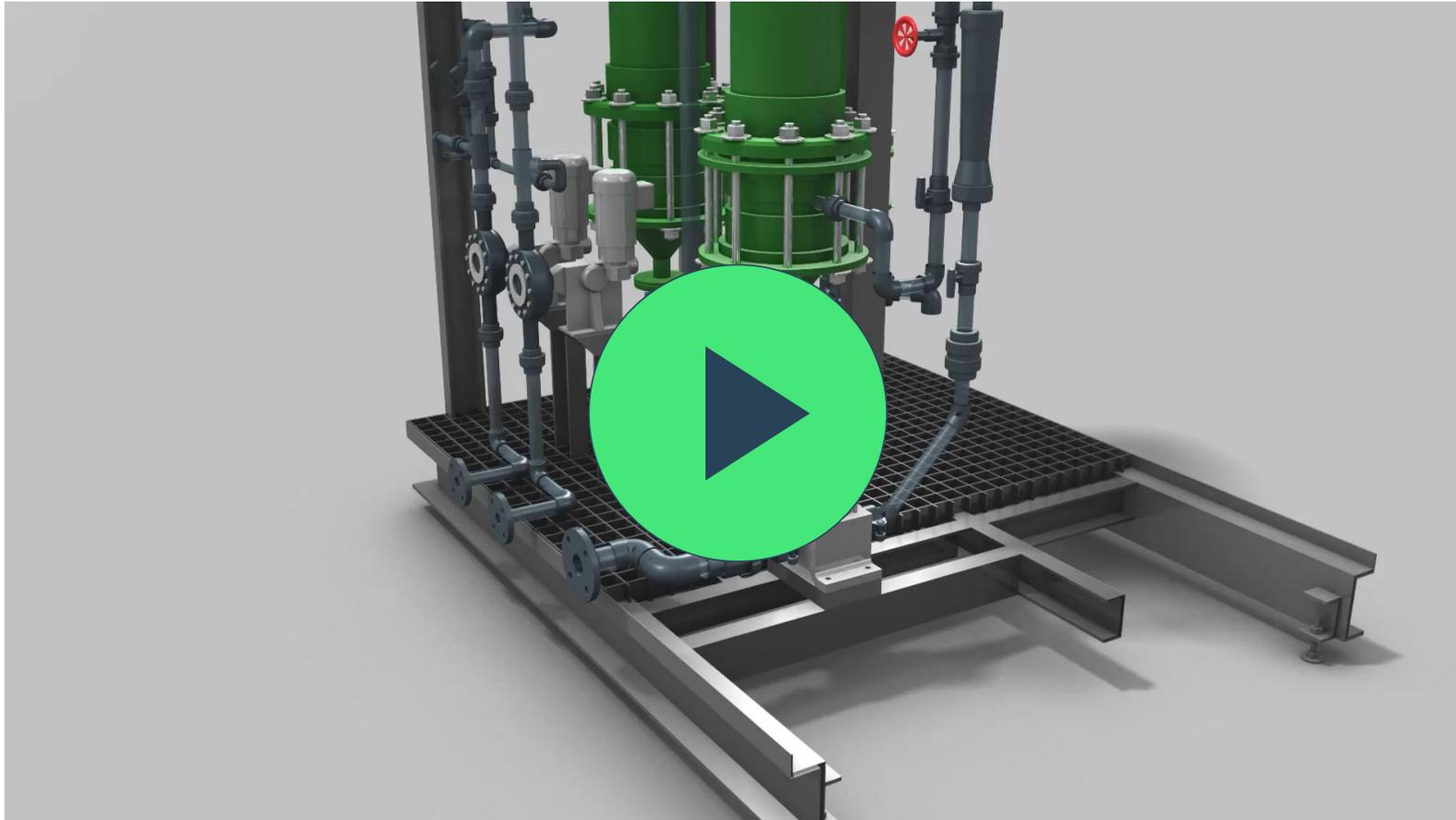
cDLE[®] selection for LithiumBank



- Sorbent plus
- Process
- Ion Exchange or
- Adsorbent
- Fixed Bed
- Carrousel
- Continuous counter-current sorption, &
- desorption
- Static Bed Column
- Continuous Moving Packed Bed, or
- Continuous Fluid Bed, or
- Continuous Stirred Tank Reactor, or
- Continuous Concentration Desorption

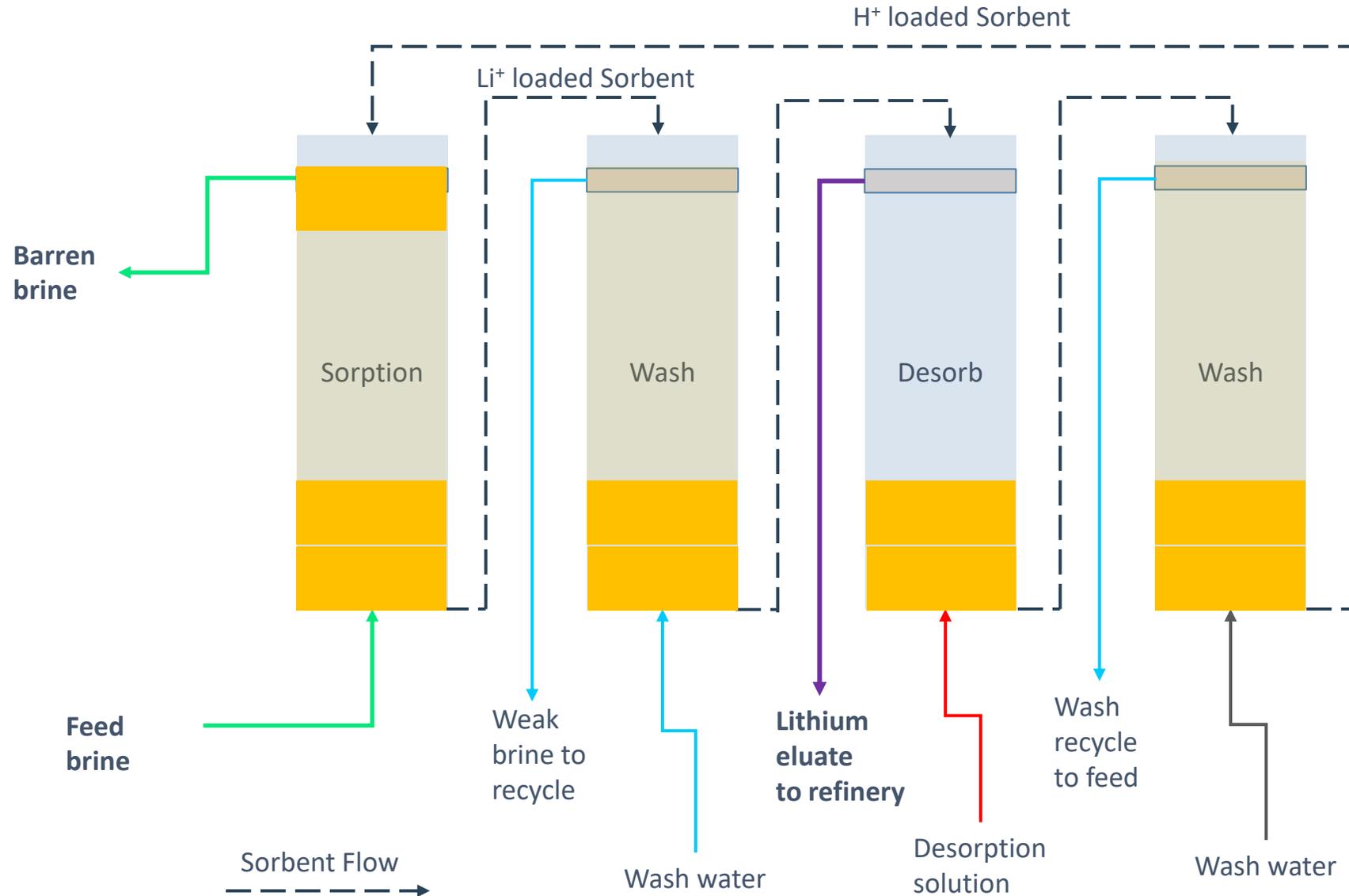


Continuous Ion Exchange Process

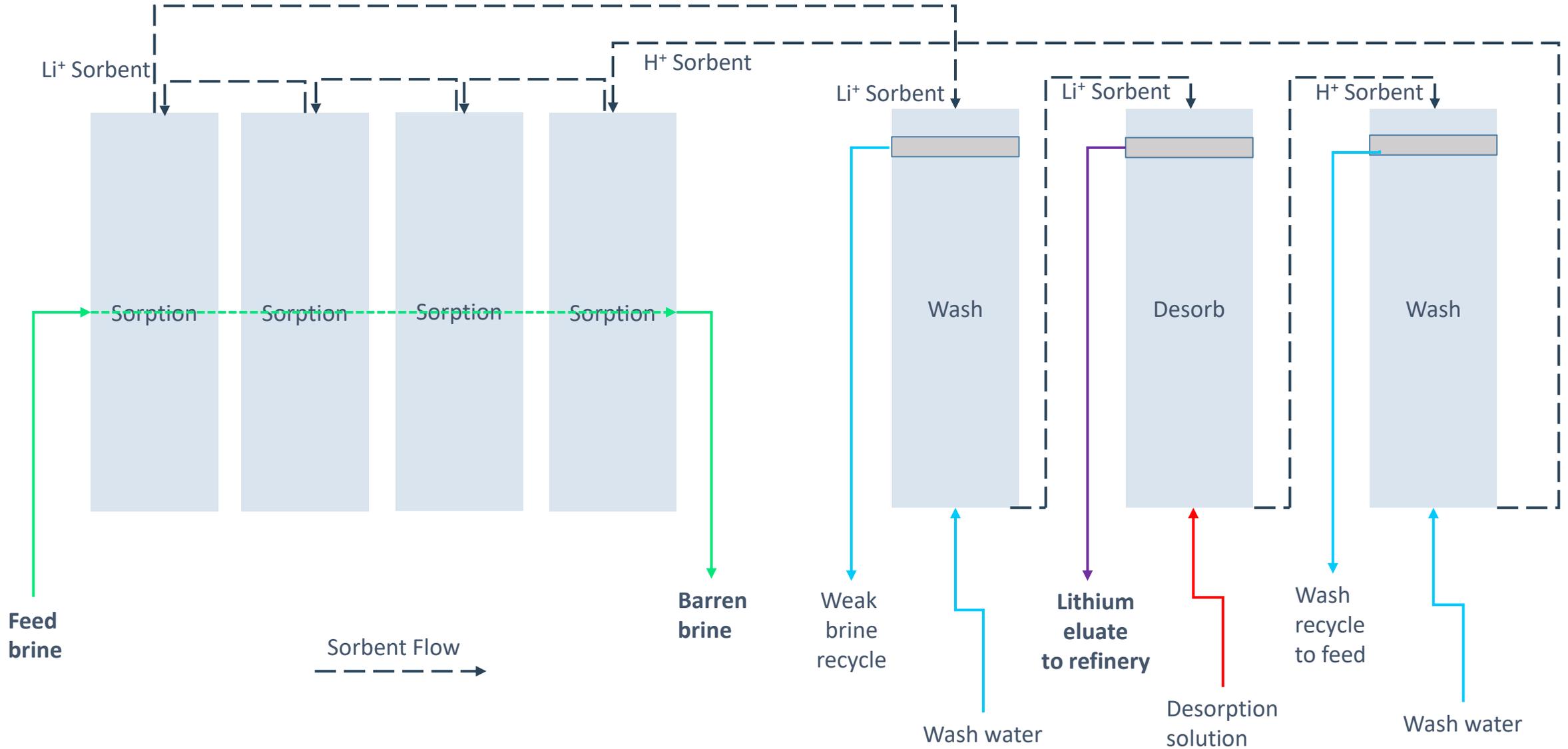


<https://youtu.be/2hgPLwmL2Ww>

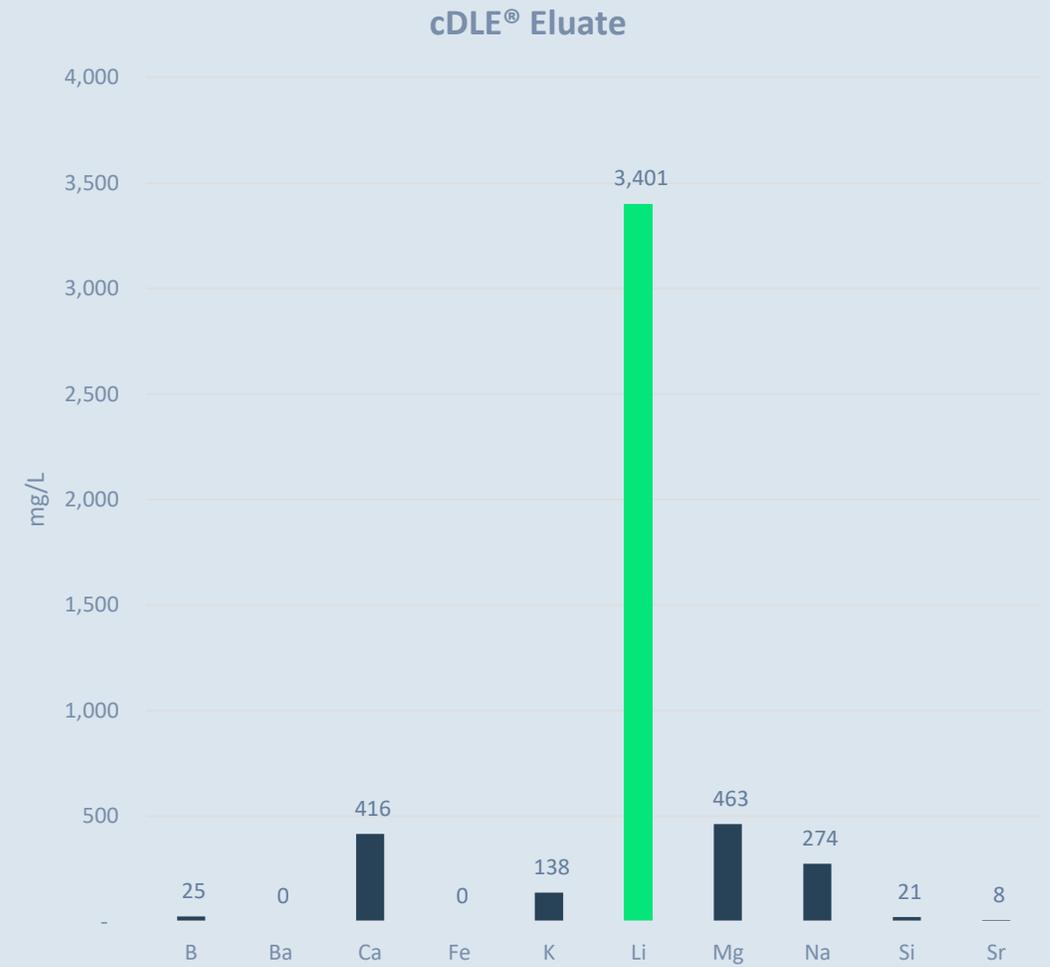
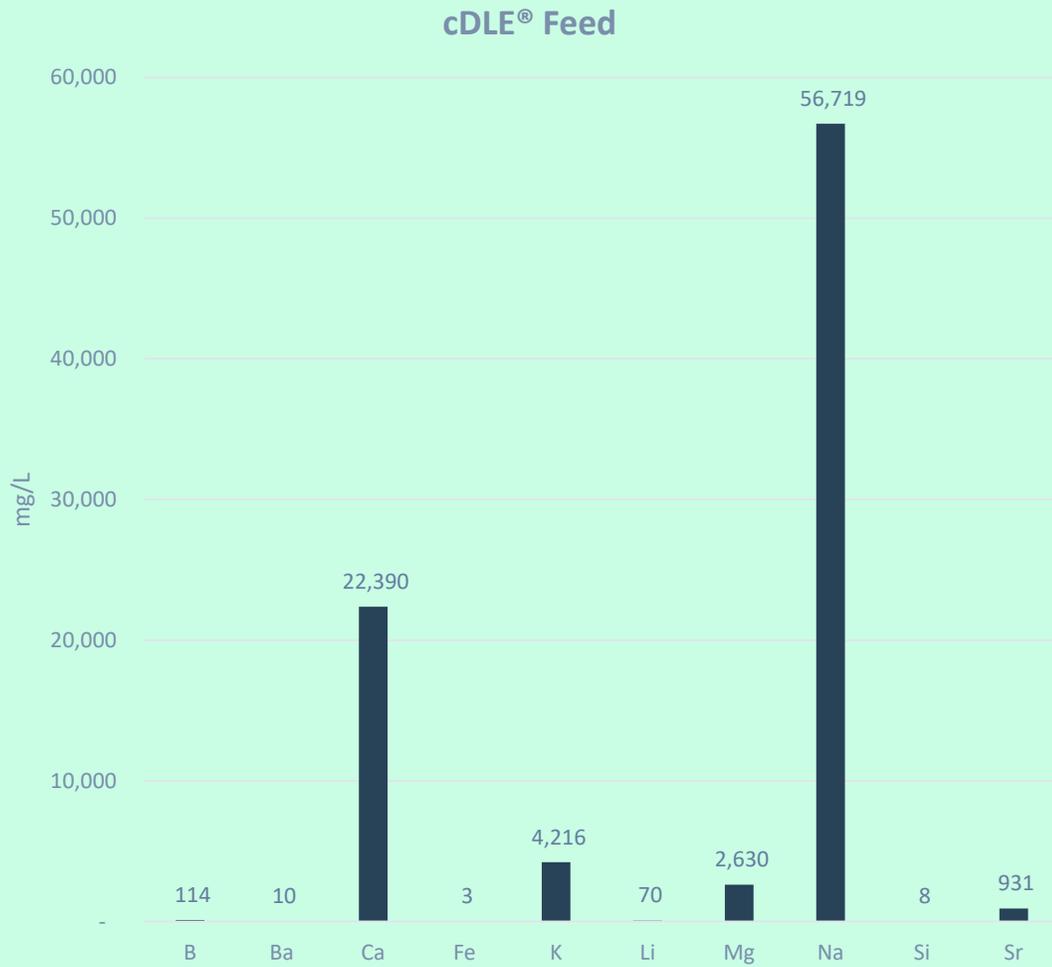
cDLE[®] Moving Packed Bed



cDLE[®] CSTR



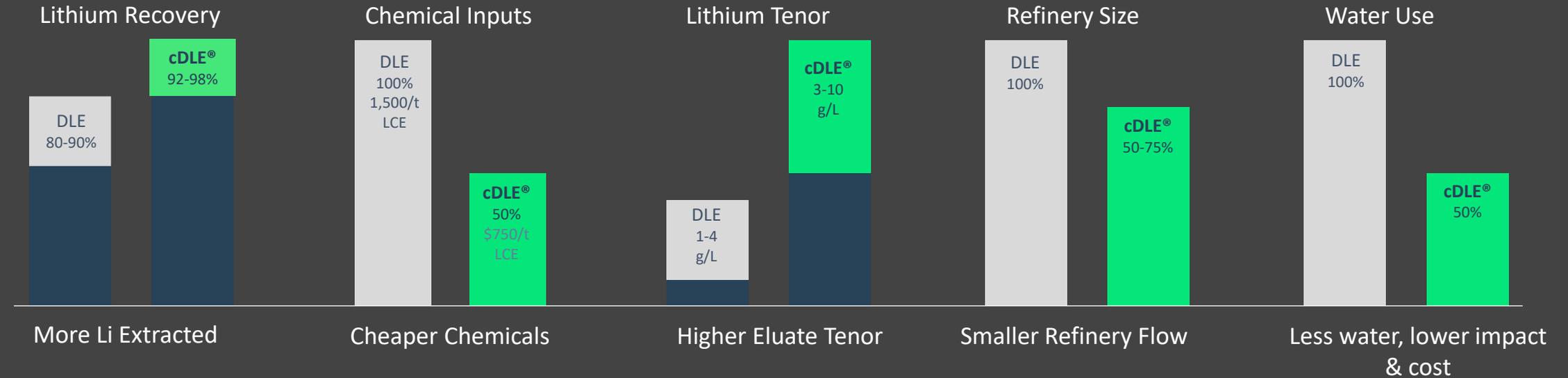
LithiumBank cDLE[®] Chemistry



cDLE[®] Benefits

cDLE[®] transforms the economics of low-grade lithium resources

- 1 More revenue
- 2 Lower opex
- 3 Lower opex
- 4 Lower energy
- 5 Better environmental credentials



cDLE[®] improves npv for lithium extraction



Results anticipated to be included in an updated Boardwalk PEA expected in **late 2023**.

Lithium Eluate Concentration

>3,000
mg/L Li



Lithium
98%
Recovery

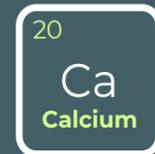
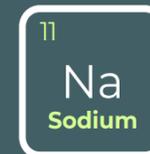


Reagents used in updated DLE processing are **~1/3** the cost of those used in the original Boardwalk PEA DLE process. That cost was **54%** of the total operating costs.

40X

Volume reduction of brine post DLE processing.
Lithium concentration from feedstock.

90%
Reduction



Next steps

Aug 2023
Technical Licence
Agreement

Nov 2023
Demonstration Plant
ships to Canada

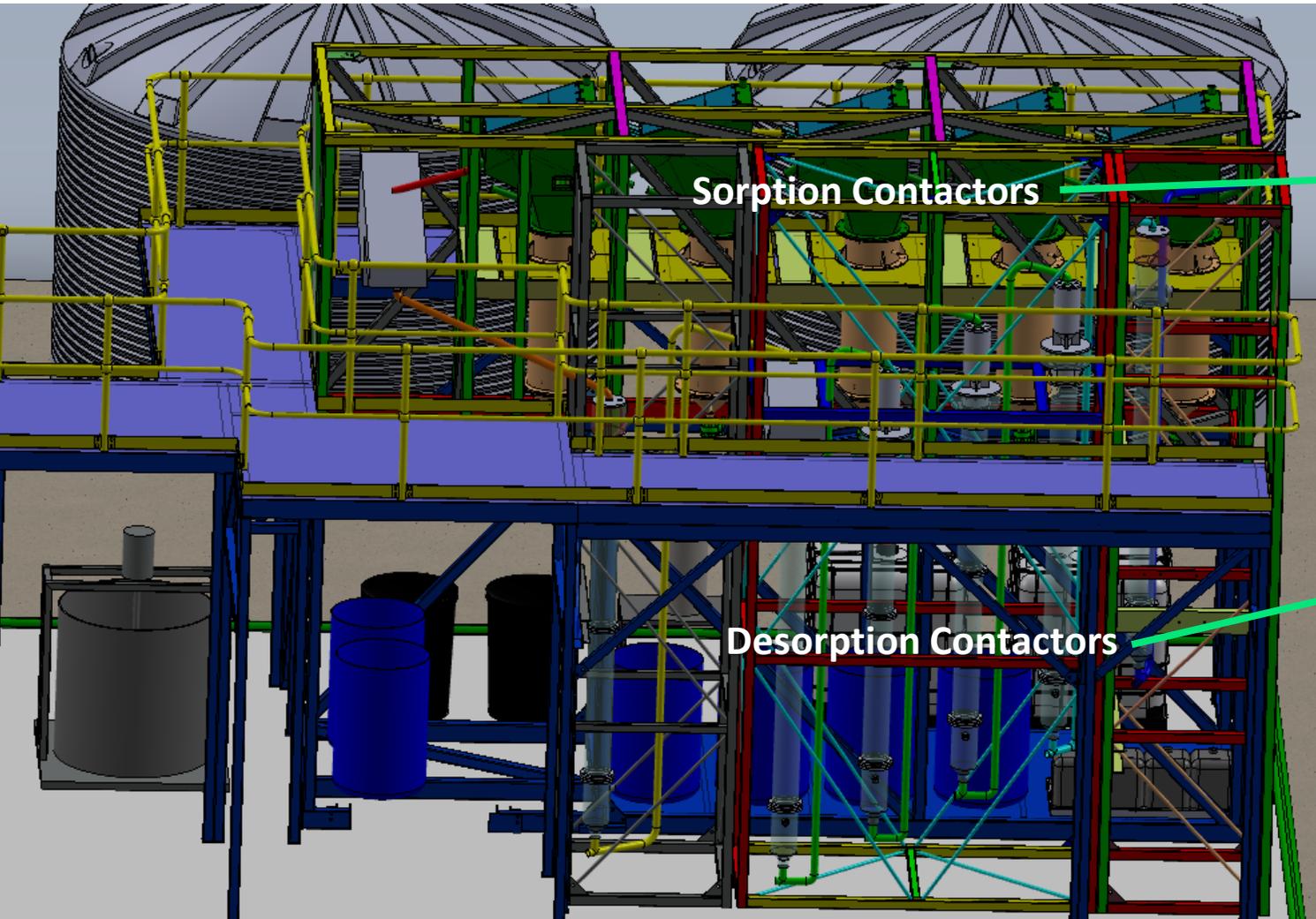
Feb 2024
Pilot Plant operational in
Calgary

Feb – Dec 2024
Operate Pilot
PFS Inputs

2025
PFS



cDLE[®] Pilot Plant



Commercial Plants

DRC uranium – 1,000m³/h



Oman sulphate antimony – 50m³/h



Commercial Plants

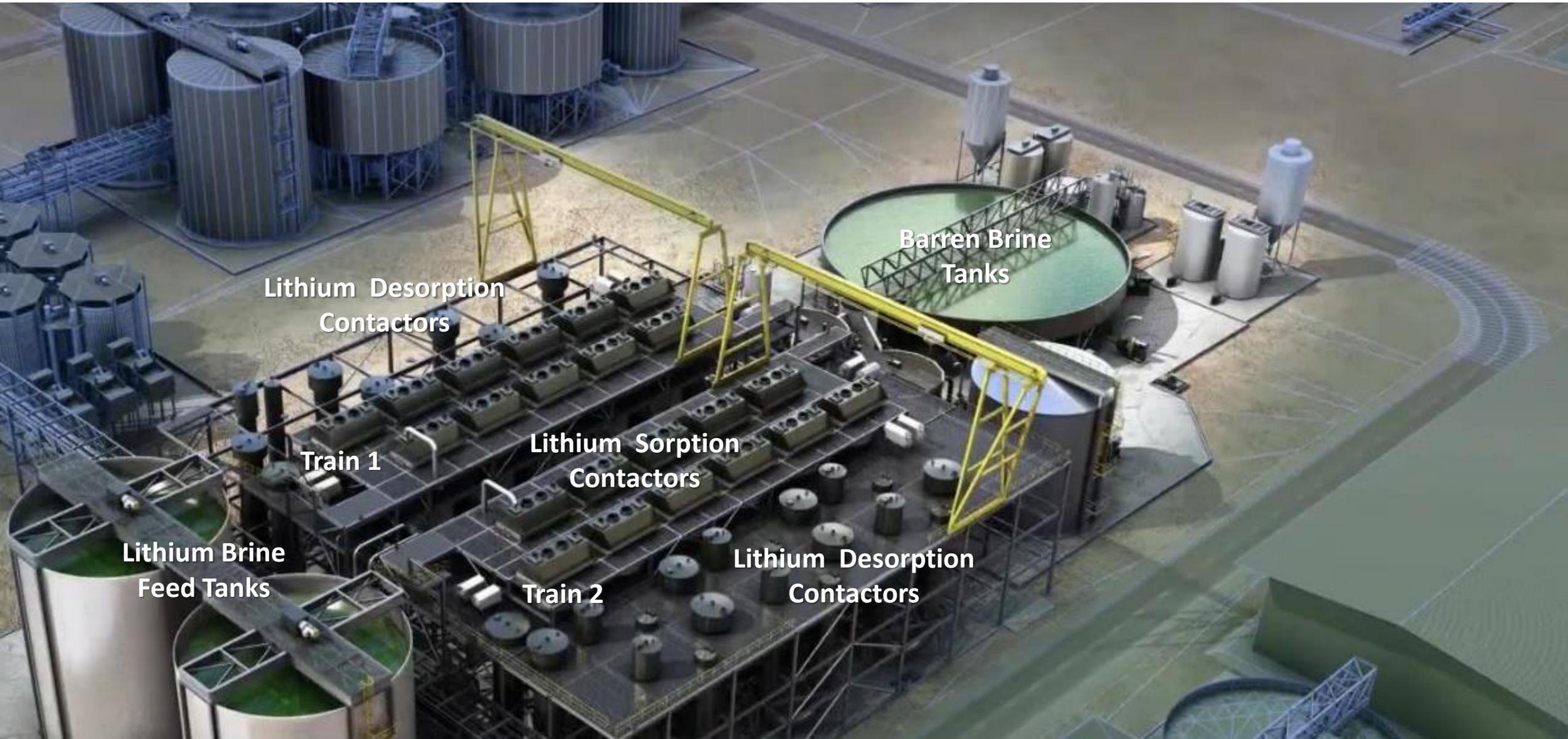
Odos China nitrate – 250m³/h



Fosterville Australia sulphate – 100m³/h



Render of typical cDLE[®] plant



Lithium Desorption
Contactors

Barren Brine
Tanks

Train 1

Lithium Sorption
Contactors

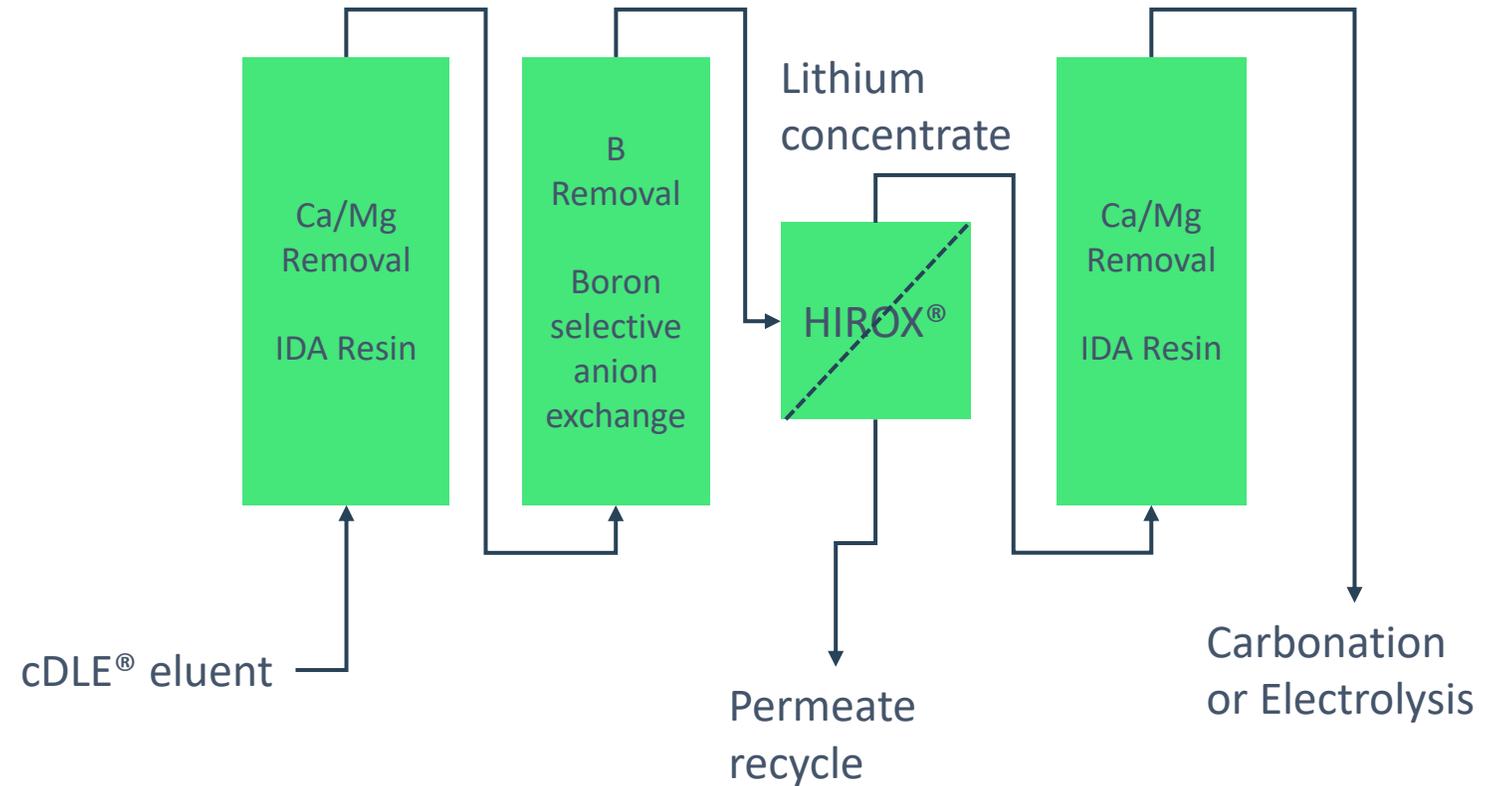
Lithium Brine
Feed Tanks

Train 2

Lithium Desorption
Contactors

cDLE[®] Eluent Purification using Clean-IX[®]

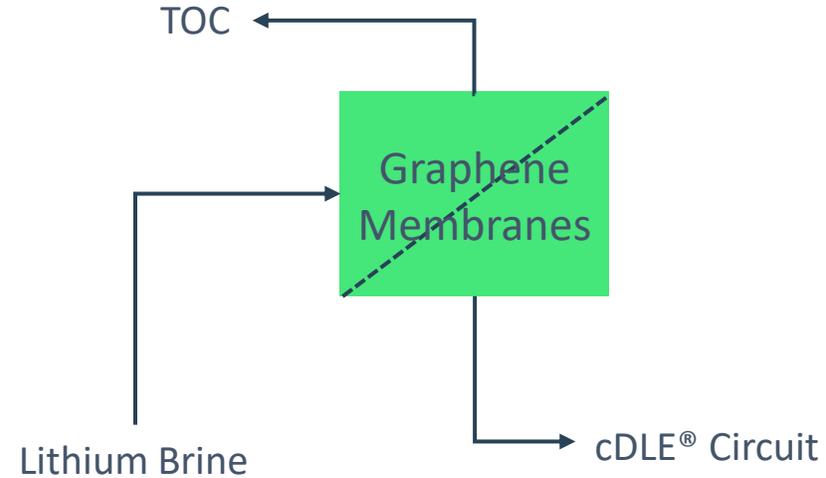
- Divalent ion removal
- Boron removal
- Reverse Osmosis Concentration
- Divalent ion removal



cDLE[®] Upstream – Graphene Membranes

Brine Pre-treatment using Graphene Membranes

- TOC removal
- Flux 100LMHb (@4bar)
- MWCO>90% @ 800Daltons
- Low to no salt rejection
- Fouling resistant
- Chlorine resistant



Operation Pressure	2 bar	
Water Recovery	95%	
Filtration Mode	Direct Filtration	
	Feed Quality	Permeate Quality
pH	7.3	7.6
TDS (mg/L)	32,700	29,100
Turbidity (NTU)	343	1.4
TOC (mg/L)	49	3
SDI	6.7	2.2



GO2L⚡THIUM

LB Lithium Bank

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