



i n t e r n a t i o n a l
battery metals

February 2022

International Battery Metals' ("IBAT") Objectives



Core Issues with the Lithium Industry

Massive lithium production shortfall this decade

- ✗ Benchmark is projecting a 52% shortfall in lithium production by 2030
- ✗ Implementation time for conventional lithium extraction plants range from 5 – 12 years
- ✗ There is also a shortage of lithium hydroxide and carbonate production capacity

All current lithium production plants have terrible environmental records

Lithium from Brine	Hardrock Mining
<ul style="list-style-type: none">✗ Solar evaporation processes in Chile recover only between 20 – 30% of the lithium✗ Rest is wasted in salt piles	<ul style="list-style-type: none">✗ Huge chemical consumption, waste ponds, tailings ponds and sludge ponds
<ul style="list-style-type: none">✗ Resource depletion	<ul style="list-style-type: none">✗ Groundwater pollution
<ul style="list-style-type: none">✗ Depletion of critical groundwater, leading to displacement of Indigenous People in Chile	<ul style="list-style-type: none">✗ Most of these issues are hidden because the ore is processed in China



IBAT's Objectives

- Create a revolutionary lithium extraction technology that is defined by
 - 1 Extreme environmentalism
 - 2 Resource protection
 - 3 Rapid implementation and production
 - 4 Low capital and operating cost

What IBAT Has Done



Engineered and built our first patented⁽¹⁾ Mobile Extraction System

- US testing and demonstration in March 2022
- Expected shipment to a South American salar in Q2 2022



Modular and Mobile

- This feature allows us to place equipment essentially at any place that we find lithium
- Rapid deployment – months rather than years or decades to implement
- Ability to address a wide range of lithium resources – the resource size does not matter



High Efficiency

- Our system is capable of extracting high percentages of the lithium in solution
- It also rejects over 99% of brine impurities without secondary purification

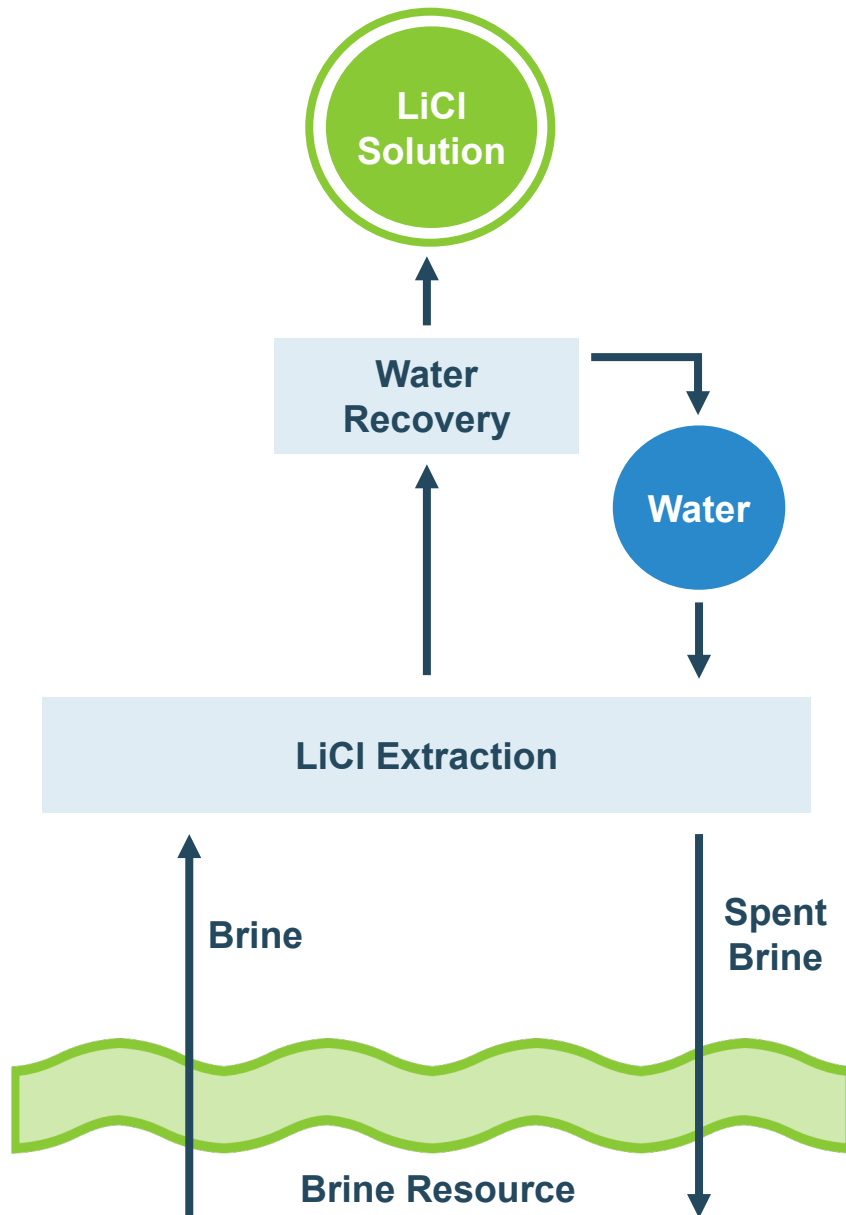


Clean – Low Environmental Footprint

- There are essentially no chemicals, waste water or waste solids in the lithium extraction process
- Very low CO₂ footprint

1) U.S. Patent No. 11,229,880 issued January 25, 2022

How IBAT's Technology Works



Process Description

- A 35% Lithium Chloride solution is produced for shipment
- Impurities are typically less than 0.1 – 0.5% on a LiCl basis
- We utilize a special absorbent that has a unique double selectivity
 - It rejects virtually all cations except lithium and all anions except chloride
- This absorbent requires only water for regeneration
- Brine and water are kept separate in the extraction process allowing production of high purity lithium chloride product
- Depending on environmental regulations, spent brine can be reinjected into the resource, sent to a potash operation or impounded on the salar

Comparable Brine Operations



IBAT far exceeds its peers with respect to mobility, capital cost and construction start up time



	International Battery Metals	ALBEMARLE® SQM	Livent	Standard LITHIUM
Type of Technology	Mobile – DLE via Selective Absorption	Solar Evaporation	Modified DLE via Selective Absorption	Modified DLE via Selective Absorption
Type of Installation	Modular and Mobile	Stationary	Stationary	Stationary
Chemical Consumption	Brine / water cycle – minimal chemical consumption	Very high due to impurities	Low	High due to ion exchange removal of impurities
Estimated Capital Cost for a 20,000 MT LCE Plant	~US\$120 mm	~US\$1 bn	>US\$500 mm	>US\$500 mm
Construction Start-up and Production	~1.5 years	6 – 12 years	~5 years	~5 years
Target Production Capacity	~20,000 MT	~20,000 MT	~20,000 MT	~20,000 MT

IBAT's Corporate Strategy



U.S.A.

- IBAT is focused on the use of its patented Mobile Lithium Extraction Technology⁽¹⁾ to recover lithium chloride and produce battery grade lithium products in the US
- IBAT will accomplish this via acquisition of favorable brine resources and partnerships with mineral and surface rights owners
- IBAT is currently in discussions with several owners



Argentina and Chile

- IBAT has licensed its Extraction Technology to Ensorcia for lithium extraction and production operations in Argentina and Chile
- IBAT's value creation is based on 4 elements
 - 1 IBAT receives royalty on gross sales of final products after government royalties are paid
 - 2 IBAT constructs and deploys its Mobile Extraction equipment on a cost + 10% basis
 - 3 IBAT operates the equipment on a cost + 10% basis
 - 4 IBAT owns 10% of the project



Global

- As the company develops, IBAT anticipates becoming a global leader in low cost, environmentally and socially responsible lithium extraction

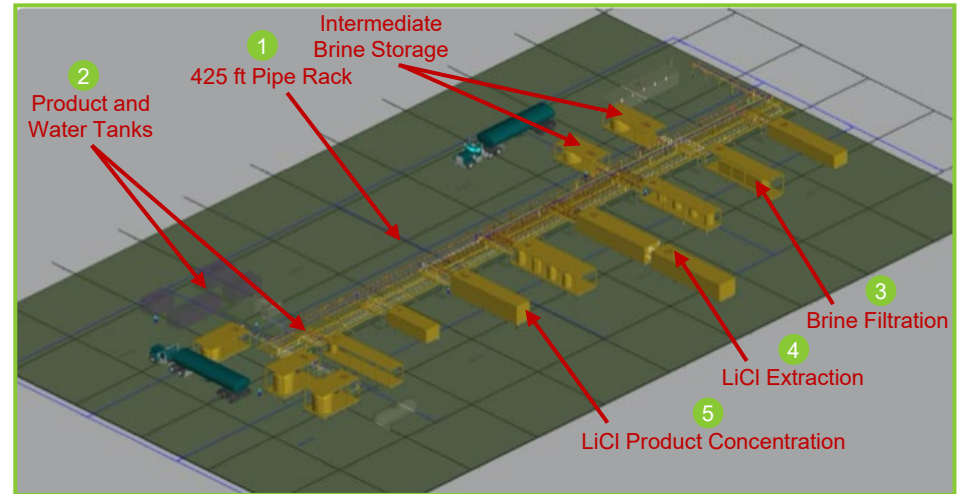
1) U.S. Patent No. 11,229,880 issued January 25, 2022

Approximate Modular Plant Layout



Key Elements

- 1 425 ft pipe and electrical rack
- 2 Brine, water and product tanks
- 3 Brine filtration to remove solids
- 4 Lithium extraction via a highly selective absorbent
- 5 Strip water concentration to ~12% LiCl solution followed by thermal evaporation to 25% LiCl



Transportation of LiCl solution to a Lithium Carbonate or Hydroxide Plant



Photos of Modular Equipment



Conclusion



IBAT's patented, modular and mobile lithium extraction plant provides key advantages

1 High Flexibility

2 Rapid Deployment

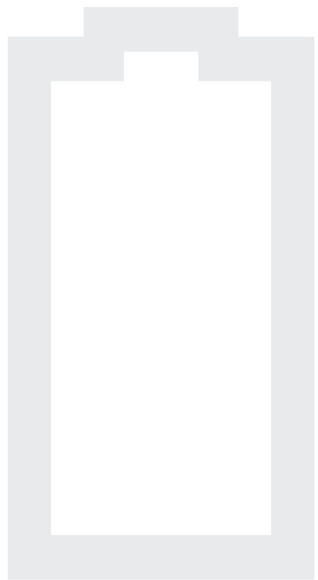
3 No Chemical Requirements

4 High Lithium Extraction and Impurity Rejection Efficiency

5 Key Environmental and Economic Advantages Over Current Lithium Extraction Technologies



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Appendix

CEO: Dr. John Burba, Ph.D.



IBAT's technology development is led by Dr. John Burba, a world-renowned pioneer in lithium extraction technology known as the "Godfather of Lithium"

Background



- IBAT is led by Dr. John Burba, a chemical and engineering executive with over 40 years of experience in the industry and a pioneer in the development and implementation of Direct Lithium Extraction
- Dr. Burba began his career at Dow Chemicals Co in the 1980s focusing on lithium separation
- After leaving Dow Chemical in 1992, Dr. Burba and the late Dr. Bauman invented the first practical selective lithium extraction absorbent
- In 1994, Dr. Burba initiated a design process within FMC (now Livent) to install the selective absorption process in the Salar de Hombre Muerto in Argentina, which remains an industry-leading operation
- Dr. Burba has reengineered the entire selective absorbent process to create the modular plants being produced by IBAT today
- Dr. Burba is a prolific named inventor, having his name associated with 80+ patents, many of which pertain to lithium and battery technologies

Extensive Previous Experience



IBAT's Mobile Extraction Units Are Superior to Incumbent Technologies



IBAT's patented mobile extraction technology is a step-change from traditional processes that are capital intensive and require long lead, multi-year development cycles before deployment

- Direct lithium extraction technology represents a fundamental shift from traditional lithium extraction methods, with superior investment, design, construction and resource characteristics
- Although a novel application and proprietary patented⁽¹⁾ process design, the fundamentals of the Company's DLE technology have been proven and implemented for decades at FMC's operation in Argentina and were previously overseen by Dr. Burba himself

Characteristics of Extraction Technologies

	Hard Rock / Spodumene	Traditional Brine / Solar Evaporation	Mobile Lithium Extraction  international battery metals
Investment Characteristics	<ul style="list-style-type: none"> ■ Large Capital ■ Long Return Cycle 	<ul style="list-style-type: none"> ■ Large Capital ■ Long Return Cycle 	<ul style="list-style-type: none"> ■ Stepwise Progressive Investment ■ Staged Results
Exploration, Permitting and Resource Development	<ul style="list-style-type: none"> ■ Large Comprehensive Review and Development 	<ul style="list-style-type: none"> ■ Large Characterizations and Environmental Disposition 	<ul style="list-style-type: none"> ■ Stepwise Exploration, Permitting and Development
System Design Characteristics	<ul style="list-style-type: none"> ■ Long Lead ■ Large Footprint ■ Complex Solids Handling 	<ul style="list-style-type: none"> ■ Chemical Mega Project 	<ul style="list-style-type: none"> ■ Containerized Integrated Mobile Units
Construction	<ul style="list-style-type: none"> ■ Large Mobilization ■ Multi-Organizational Coordination 	<ul style="list-style-type: none"> ■ Large Mobilization ■ Multi-Organizational Coordination 	<ul style="list-style-type: none"> ■ Plug and Play Mobilization ■ Repetitive Fabrication

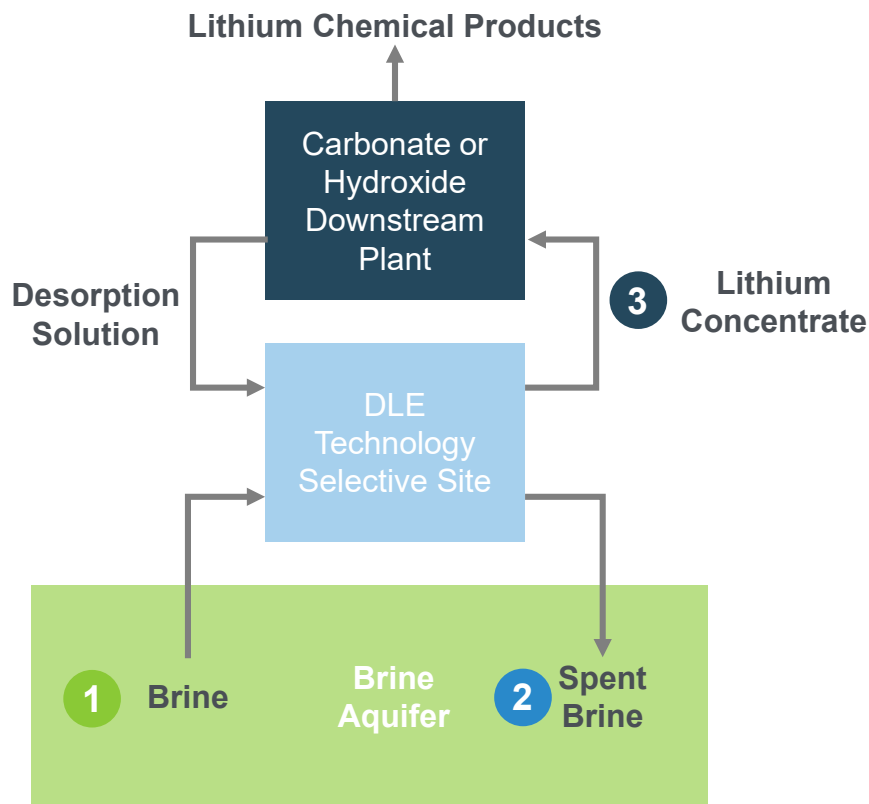
1) U.S. Patent # 11,229,880

Direct Lithium Extraction Overview



- Legacy brine lithium extraction methods pump brine from underground reservoirs into evaporation pools, allowing solar radiation to evaporate the water leaving behind the salt compounds that are subsequently processed at co-located facilities
 - The evaporation process can take up to 8 to 24+ months before salt is available to be processed and recovery rates are poor, ranging between 20-30%
- DLE process expedites the lithium extraction rate, increases the lithium recovery factor and reduces the impurity level during processing when compared to evaporation methods

Generalized DLE Process⁽¹⁾



1 Natural Brine is pumped from an underground aquifer to the surface prior to undergoing DLE processing

2 The brine undergoes DLE process and is mixed with reagents to remove impurities and create a lithium concentrate. The process substantially increases the recovery rate of Lithium within the brine solution (from 50% to 80%+)

3 The lithium concentrate solution is finally pumped to a downstream plant where it is further mixed with reagents to create various lithium chemical products

Representative Concentrations – South American Brine

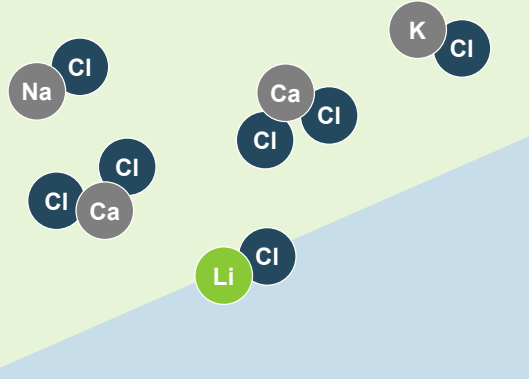
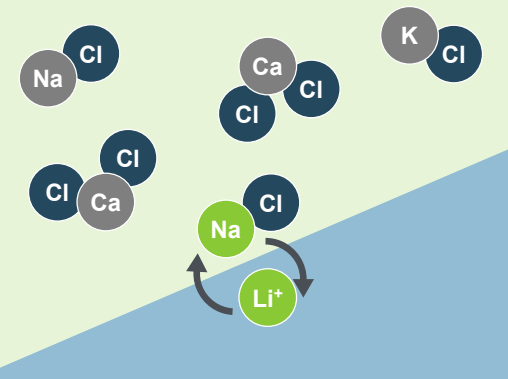
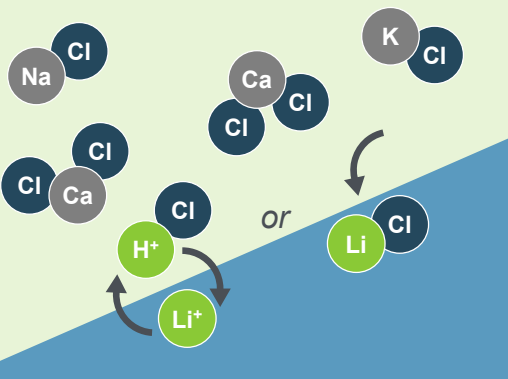
	1 South American Brine	2 Spent Brine	3 Lithium Concentrate
<i>(Units in mg/L)</i>			
Lithium (Li)	600-1,200	5-10	6,000-12,000
Magnesium (Mg)	2,000	2,000	5-15
Calcium (Ca)	30,000	30,000	5-15
Sulfate (SO ₄)	500	500	5-15

1) Source: Jade Cove Partners

Direct Lithium Extraction Technologies



Three Main Families of DLE Technologies⁽¹⁾

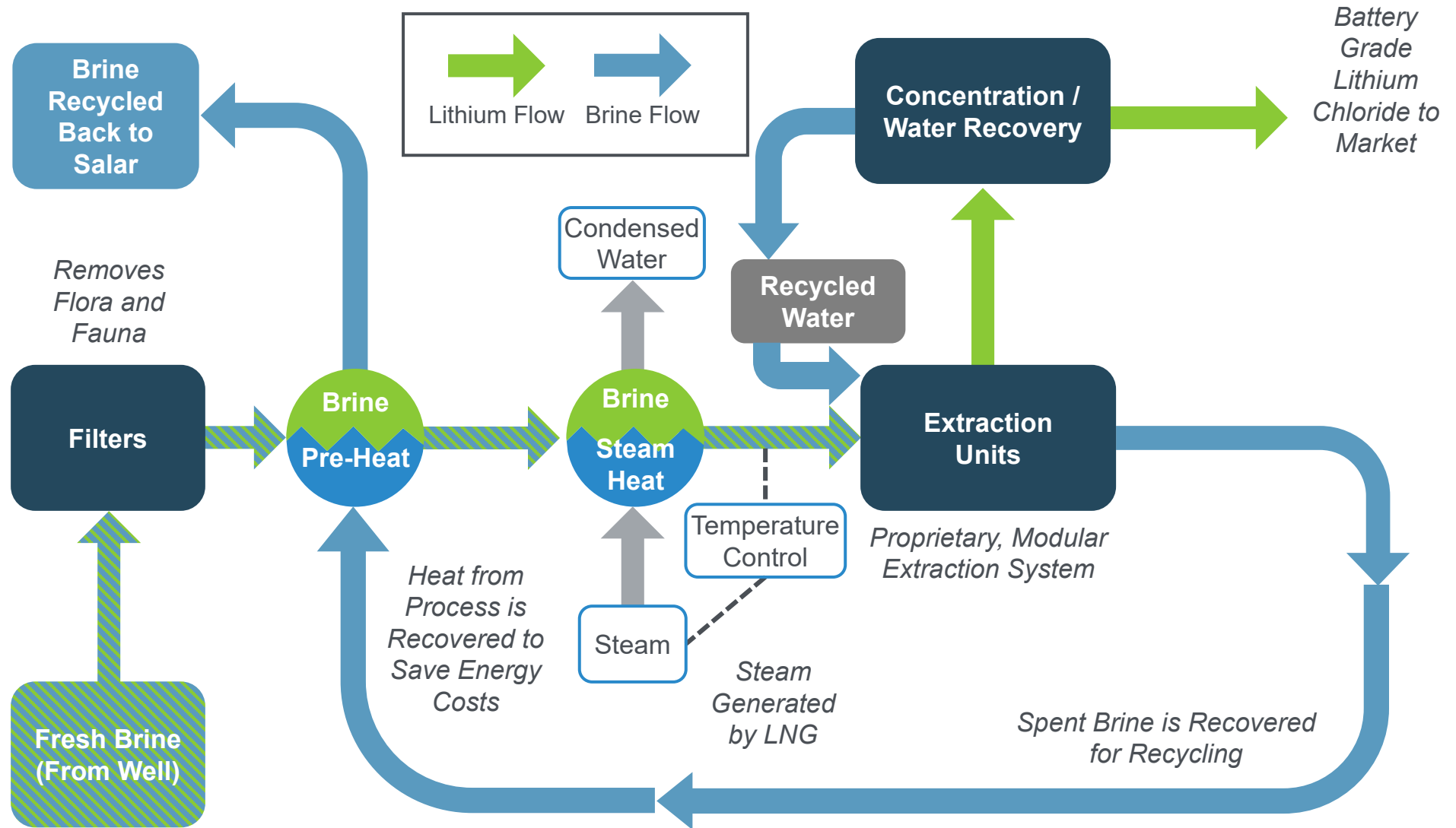
Technology	<p style="text-align: center;">Absorption</p> <p style="text-align: center;">LiCl molecule in brine physically absorbed onto sorbent and removed with strip solution</p> 	<p style="text-align: center;">Ion Exchange</p> <p style="text-align: center;">Li⁺ ion in brine chemically absorbed into solid ion exchange material and swapped for other positive ion</p> 	<p style="text-align: center;">Solvent Extraction</p> <p style="text-align: center;">Liquid phase with adsorptive or ion exchange-type properties removes LiCl or Li⁺ from brine</p> 
Benefits	<ul style="list-style-type: none"> ■ Water is used to recover the lithium chloride – no reagents ■ >90% Lithium extraction efficiency ■ FMC is only current commercial operation ■ Typically produces high quality lithium chloride 	<ul style="list-style-type: none"> ■ High concentration of Li in the solution ■ Impurity contamination risk is reduced 	<ul style="list-style-type: none"> ■ High concentrations of lithium can be produced from the brine
Limitations	<ul style="list-style-type: none"> ■ Usually requires temperatures > 50°C 	<ul style="list-style-type: none"> ■ Poor extraction efficiency ■ High OPEX costs resulting from large amounts of base and acid inputs ■ Potential to degrade in acidic conditions 	<ul style="list-style-type: none"> ■ Organic solvents are environmentally challenging ■ Fire risk with high-temp brines ■ Expensive relative to other technologies ■ Only works in brines with low concentrations of Ca and Mg

1) Source: Jade Cove Partners

IBAT Direct Lithium Extraction Illustrative Process Flow



IBAT's process has been highly engineered to result in the most energy-efficient DLE process in the industry



Significantly Less Footprint Required



IBAT's MEU's require significantly less space than existing brine fields that rely on evaporation to separate lithium from brine

- IBAT's modular system also does not require significant foundation or earth work relative to large brine fields, resulting in the ability to deploy more quickly and re-deploy cost effectively
- IBAT's modular nature and footprint also allow for extraction of lithium from brine that is typically uneconomic for larger plants or other technologies that require a fixed plant

IBAT Modular Plant Footprint Compared to Existing Brine Lithium Extraction Method



Modular Extraction Unit requires only ~25 acres to produce 20K MT of lithium chloride, 98% less than traditional brine solar evaporation methods

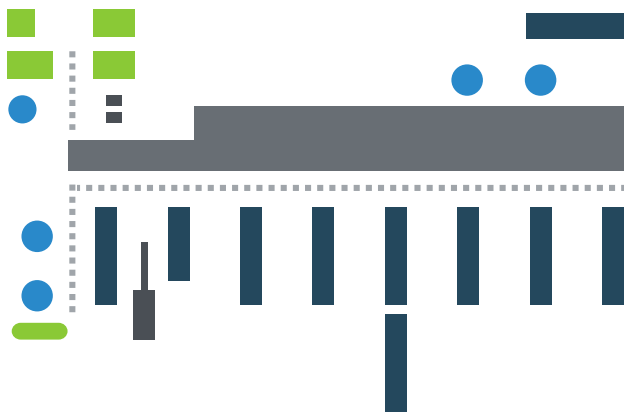
Mobile Extraction Module Underpins Value Proposition



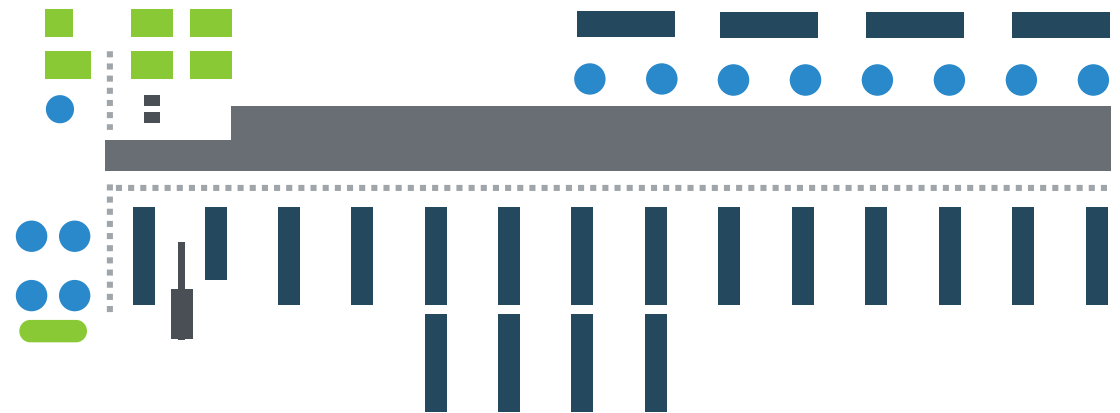
IBAT's skid-based system was fundamentally designed to be modular, which results in many favorable characteristics for resource developers, including:

- Ability to deploy in phases and expand as capital availability or projects requirements dictate
- Accelerates first resource recovery (and thus economics) if deployed in phases
- Ability to re-deploy from one salar to another if resource profile changes
- Skid-based system is manufactured efficiently in global fabrication facilities and shipped to sites for assembly rather than built in-field, resulting in significantly lower construction costs

Pilot 5K MT LCE per Annum Plant



Scalable 20K MT LCE per Annum Plant⁽¹⁾



■ Extraction, Filtration and Heating/Cooling Modules

■ Power Generation

■ Storage Tanks

■ Pipe Rack

..... Control Cables

1) Preliminary illustrative layout

Step-Change In Sustainability – Carbon Emissions

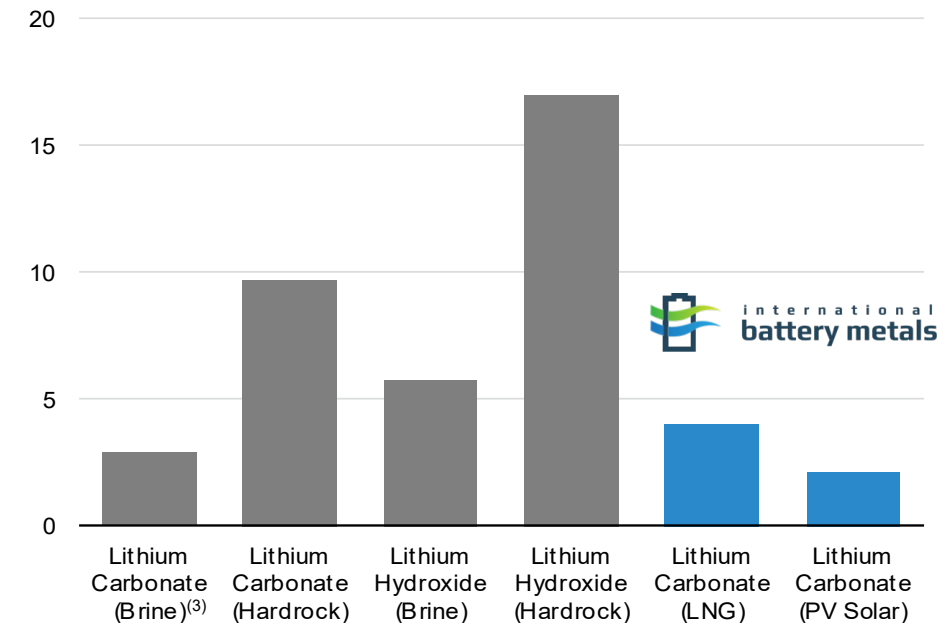


IBAT's system will be the most carbon-efficient DLE method in the market

- Primary sources of CO₂ are from fuel utilized to heat the brine for extraction, and electricity to operate the module's pumps and controls
- The initial demonstration unit will utilize LNG as a heating source and electricity source, but a transition to solar electricity is envisioned for future units, which will cement IBAT's modules as the most carbon-effective extraction source in the market

Total CO₂ Equivalent per Tonne LCE Equivalent⁽¹⁾⁽²⁾

(Tonnes of CO₂ per tonne LCE)



Total IBAT CO₂ Emissions by Energy Source⁽²⁾

	First Unit	Future Units
Capacity (LCE)	20K MT	20K MT
Operating Days	330	330
Fuel for Steam	LNG	LNG
Electricity Source	LNG	PV Solar
Total Fuel (MM Btu/hr)	218.8	130.8
CO₂ Generated (MT CO₂ / MT LCE)	4.01	2.15

1) IEA. As of May 2021

2) Company provided CO₂ emissions analysis. Assumes an illustrative 330 operating days per year. As of October 2021.

3) Based on use of massive solar evaporation pods.

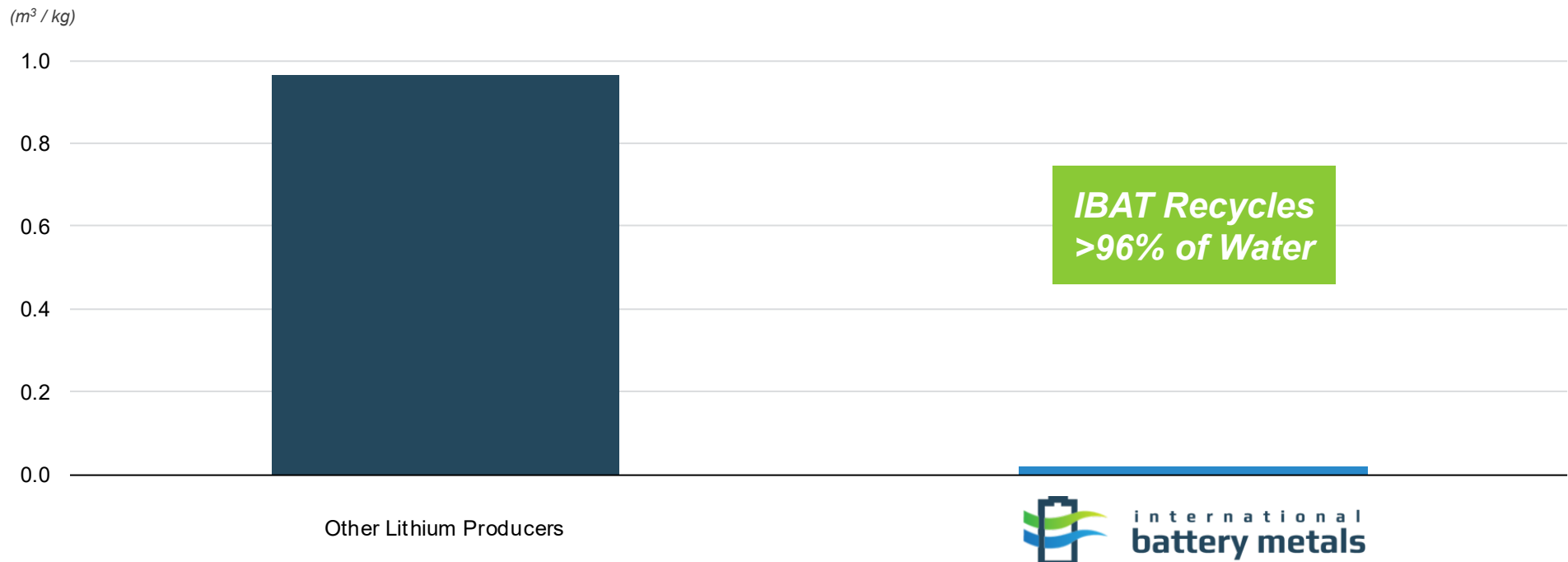
Step-Change In Sustainability – Water Usage



IBAT's system will use substantially less water than traditional brine evaporation methods, mitigating one of the key concerns of lithium extraction from brine

- Traditional lithium extraction from brines is accomplished through the use of evaporation ponds that use a large amount of water taken from salars in arid environments
- This water use affects local wildlife and can disrupt the ecosystem, which has led to environmental challenges to operators looking to expand their capacity in traditional brine lithium-producing regions
- IBAT's technology will result in >96% of water being recycled directly back into the salar, which is a key enabler of a successful permit grant

Water Expended in Lithium Production⁽¹⁾



1) IEA. As of May 2021

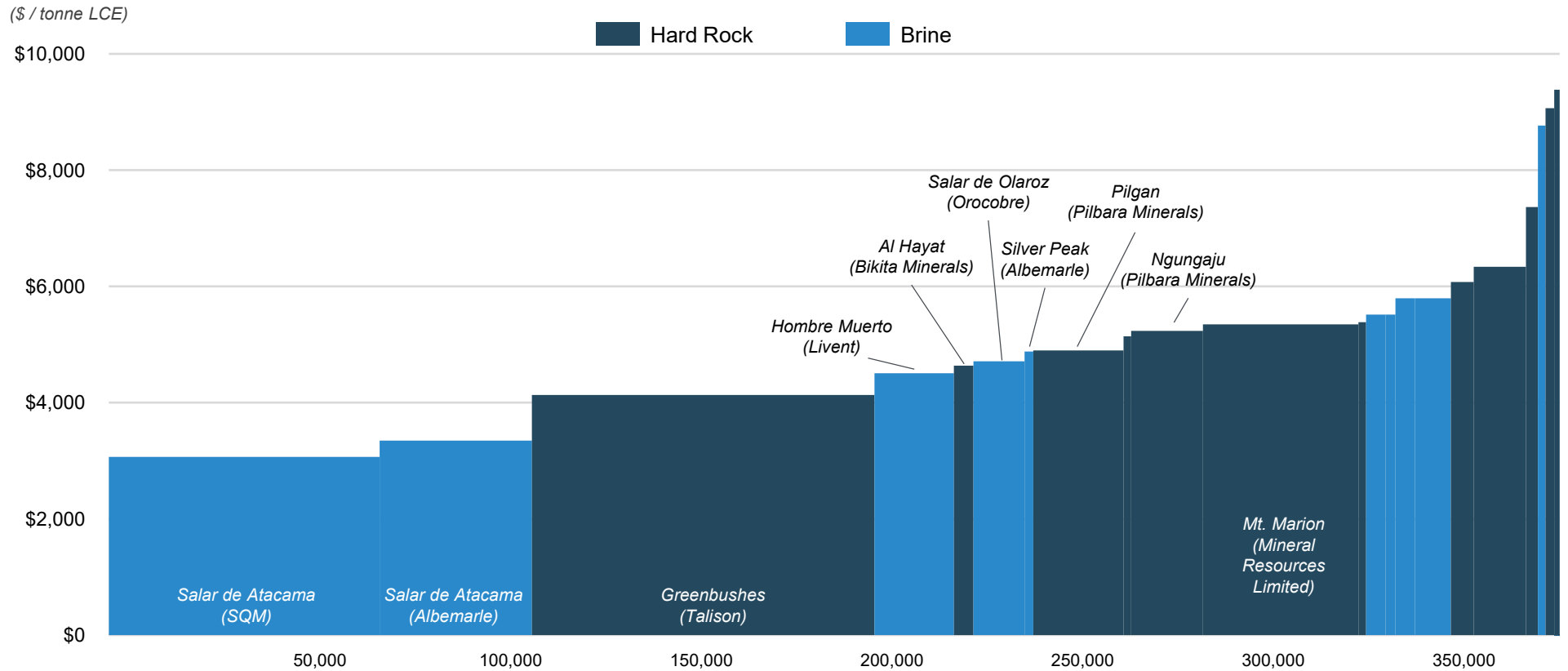
Industry Low Operating Costs



IBAT and its partners have designed the modules to be highly operationally efficient and have focused on minimizing headcount at the site while maximizing remote monitoring and automation capabilities

- The company estimates costs to produce Lithium Chloride of \$1,300 – \$1,500 per tonne of LCE, and approximately \$2,000 per tonne to finish lithium carbonate conversion, making the Company one of the lowest cost producers in the industry – and with future modifications or conversion plants, the lowest cost producer

Lithium Supply Cost Curve⁽¹⁾



1) Benchmark Mineral Intelligence as of Q3 2021. Represents cash production costs, which excludes the capital charge and any government royalties for comparison with IBAT's presented operating cost

Unmatched Intellectual Property Provides Critical Advantage

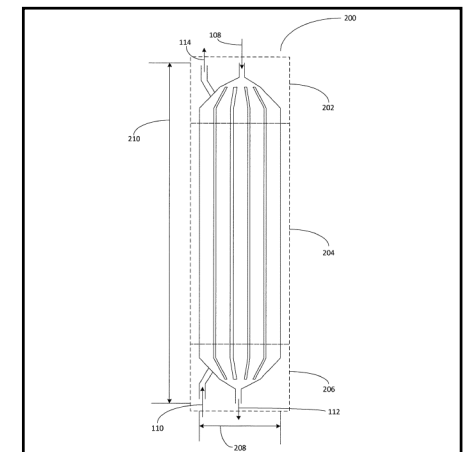
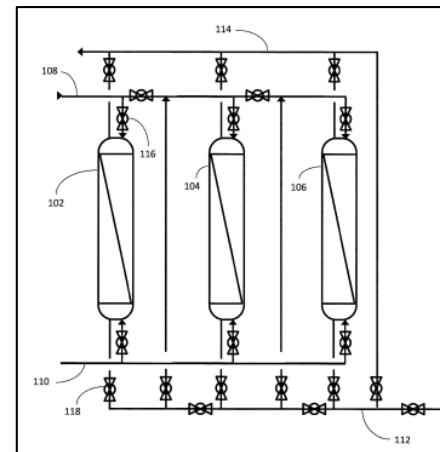
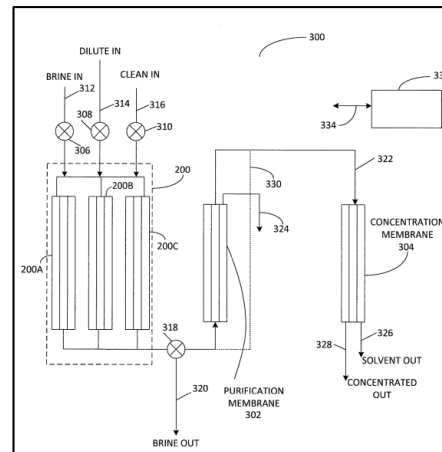
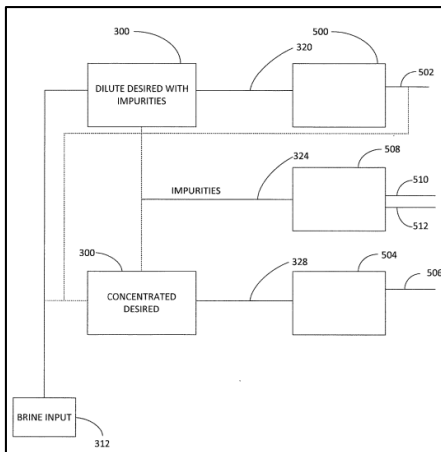


- The Company's fundamental patent on its mobile extraction technology (U.S. Patent # 11,229,880) was issued on January 25, 2022
- The patent covers modular development of DLE technology, and was broadly designed to best preserve IBAT's technology moat

Modular Extraction Apparatus

Apparatuses and methods for extracting desired chemical species from input flows in a modular unit

- United States Patent and Trademark Office ("USPTO") issued in January 2022
- USPTO – Notice of Allowance from USPTO received in December 2021
- Original patent filing: October 2018



Development Plan Timeline



IBAT is farther along the development timeline than any emerging DLE competitor, and expects to deploy its first commercial-scale unit into the field in mid-2022

- Once the initial unit is deployed, IBAT will begin manufacturing additional units

Development Plan

