Better, cheaper batteries to enable the transformation of energy and transportation

BroadBit Batteries Oy, January 2025

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BroadBit Batteries produces:

A) Lithium battery cell components for battery cell manufacturers

B) Lithium & Sodium battery cells for battery pack manufacturers

18650-prototype cell

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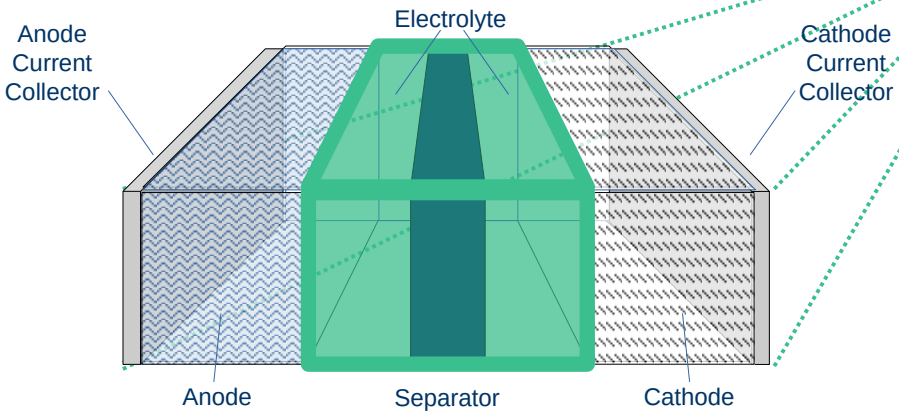
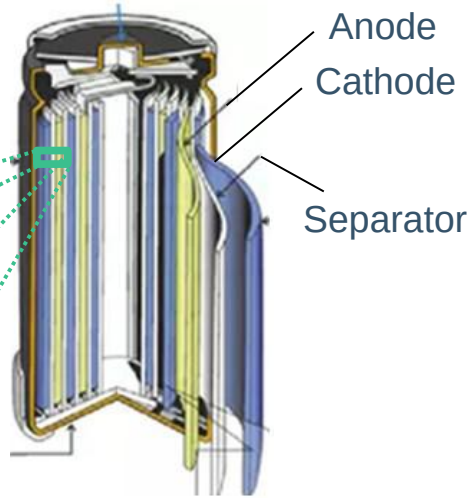
Product 1: Evolutionary

ProLion™ Electrolyte

Battery cell components
to improve existing Li-ion batteries





18650-prototype cell

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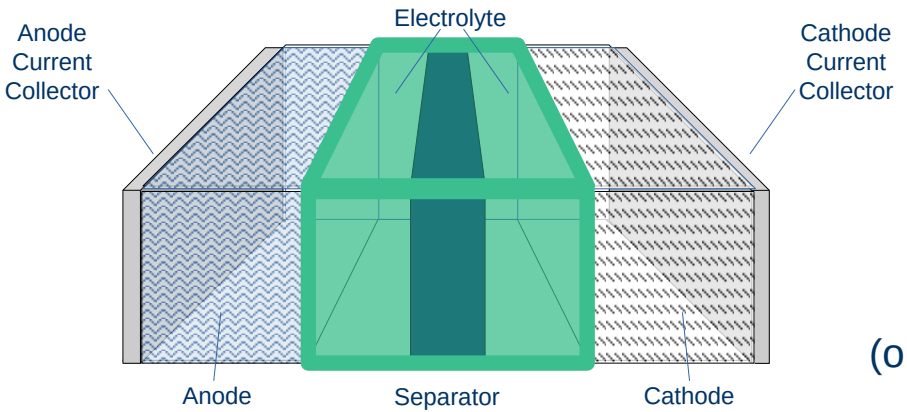

Barrels delivered to cell assembly customers
(or in-house filled cells delivered to cell customers)

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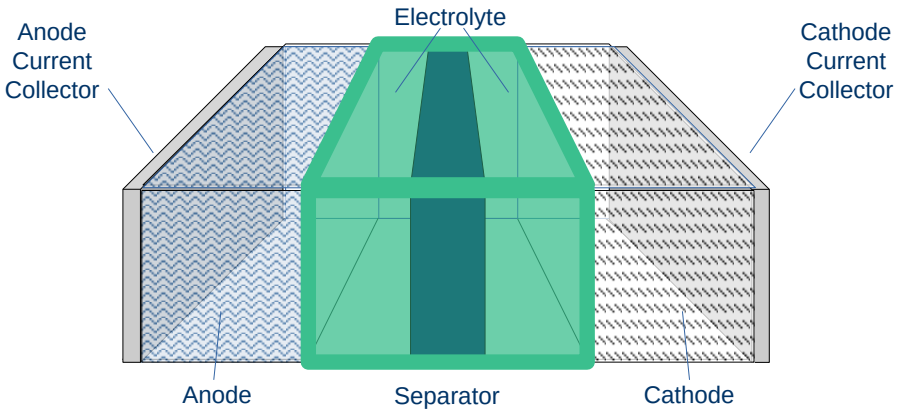
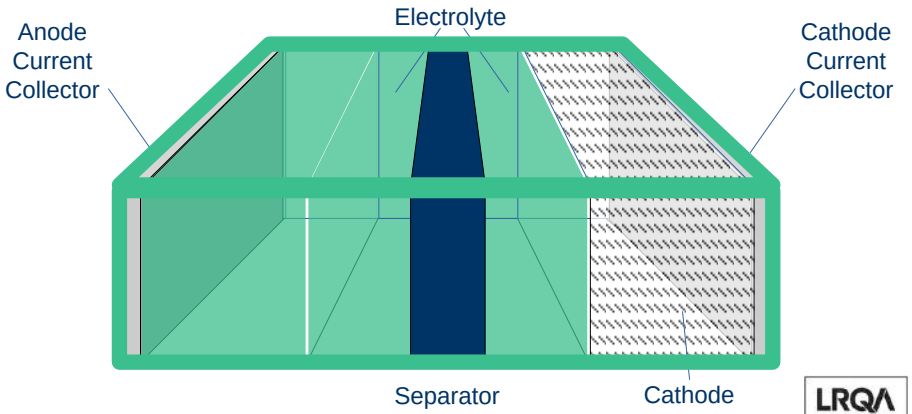


Product 2: Revolutionary

Sodium-Salt Battery

Battery cells based on table salt
to enable the energy transition



ZNL ENERGY

BroadBit Batteries produces:

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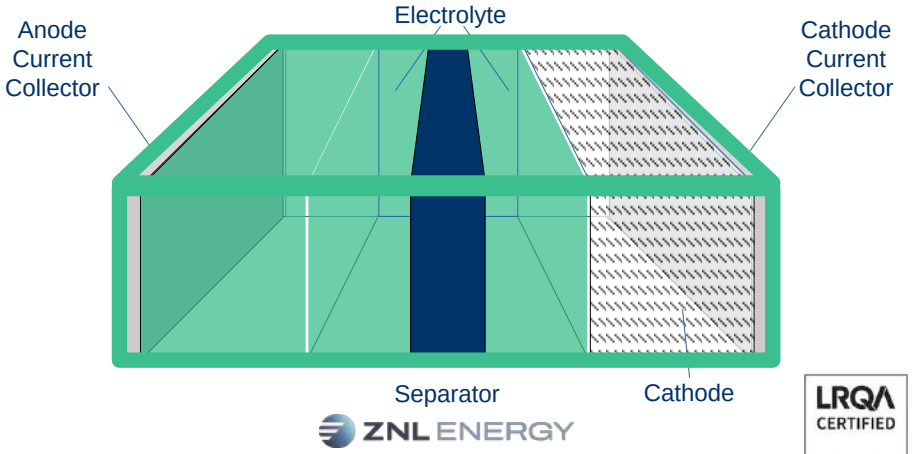
Cells delivered to cell customers

Product 2: Revolutionary Sodium-Salt Battery

Battery cells based on table salt to enable the energy transition



ZNL ENERGY

LRQA CERTIFIED
ISO 9001 · ISO 14001
ISO 45001

BroadBit Batteries produces:

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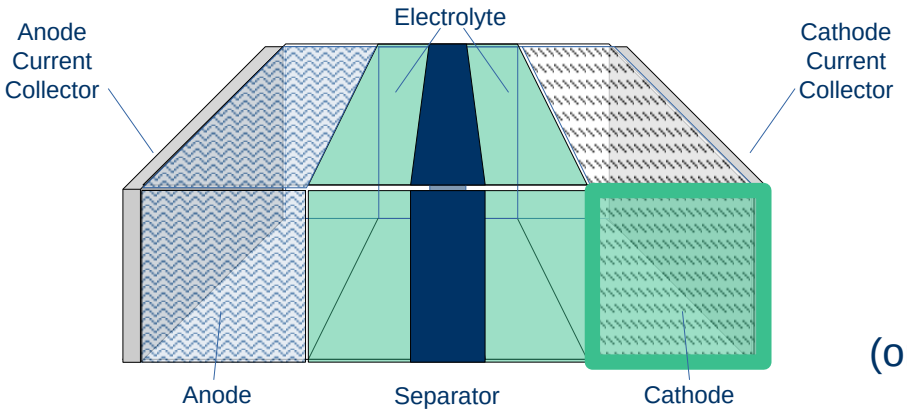
Product 3: Evolutionary

ProLion™ Cathode

Battery cell components
to improve existing **LFP** Li-ion batteries

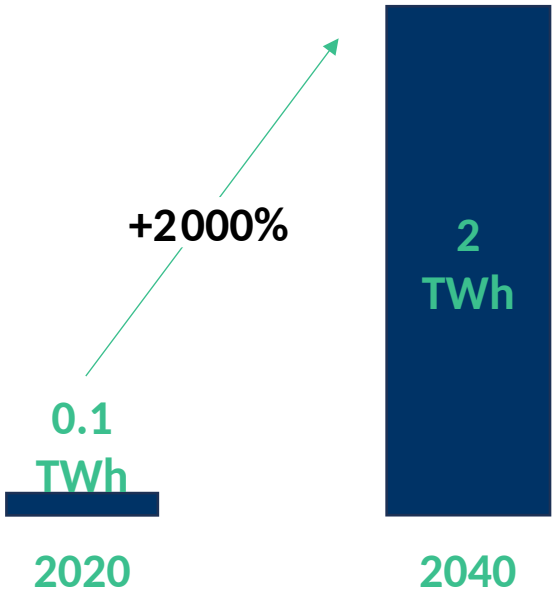


Rolls delivered to cell assembly customers
(or in-house filled cells delivered to cell customers)

Why we do it

Electrified energy & transportation systems require massive energy storage, but current technologies won't be able handle coming demand

Massively increasing demand
for battery storage



Limitations of current technologies
to handle massive increase of demand

Expensive	Limits large scale uptake
Harmfull	Toxic to people & planet
Delicate	Requires costly infrastructure
Inefficient	Wastes stored energy
Large	Takes up exessive space/weight
Unscaleable	Uses rare & unsustainable materials and energy intense processes

Why we do it better

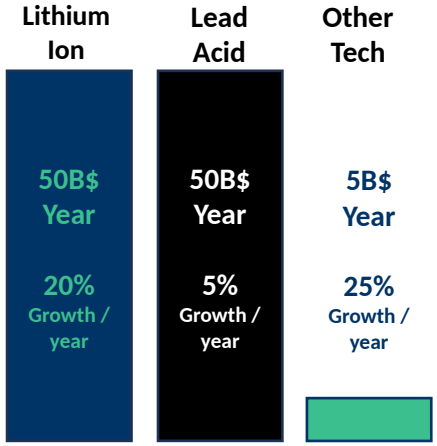
Demand can only be met through evolutionary development of existing technologies and introduction of revolutionary technologies

We improve existing Li-ion

Novel BroadBit ProLion **Components**

- Safer
- Faster charging
- More robust
- More powerful
- Longer life
- Lower cost
- More energy

Growth of Battery Markets



We replace existing technologies

Novel BroadBit Sodium-Salt **Cells**

- Even more safe
- Even faster charging
- Even more robust
- Even more powerful
- Even longer life
- Even lower cost
- Even more energy
- Scalable & Sustainable

Better Battery Chemistry

Evolutionary (Li-Ion):
Electrolyte: Long-life/Fast-charge
Cathode: Co & Ni Free
(TRL-9 2024)

Revolutionary (Na-Salt):
Anode, Cathode, Electrolyte:
Rare Earth Metal Free
(TRL-5, TRL-9 2025)

Lower Cost, Higher Performance, Greener, Safer, More Scalable

Evolutionary (Li-ion):
Water-based: Non-Toxic
(TRL-7, TRL-9 2025)

Revolutionary (Na & Li):
Dry: Liquid Free
(TRL-6, TRL-9 2025)

Better & Cheaper Battery Manufacturing

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Better & Cheaper Battery Manufacturing

Uniqueness of Broadbit's Li-ion Electrolyte technology

Novel BroadBit ProLion™ Electrolyte (for all Li-ion Chemistries):

- **Safer** (due to 100°C Higher Ignition Temperature (250°C vs. 150 for std. Li-ion) and no toxic water reaction)
- **Faster charging (50%) and more energy (10%)** (due to ability to charge at 4.4V vs. 4.2 for std. Li-ion)
- **Tougher** (due to ability with operate at 75°C vs. 60 for std. Li-ion)
- **More powerful** (due to 30% higher 3.2 mS/cm ion conductivity vs. 2.4 for std. Li-ion @ -20°C)
- **Longer life** (due to up to 4x cycle life, tested and verified for NMC, LCO, LFP and LMFP)
- **Lower cost** (up to 4x lower levelized cost due to longer cycle life and higher energy density)

TECHNOLODY VALIDATED AND READY TO COMMERCIALLY SCALE

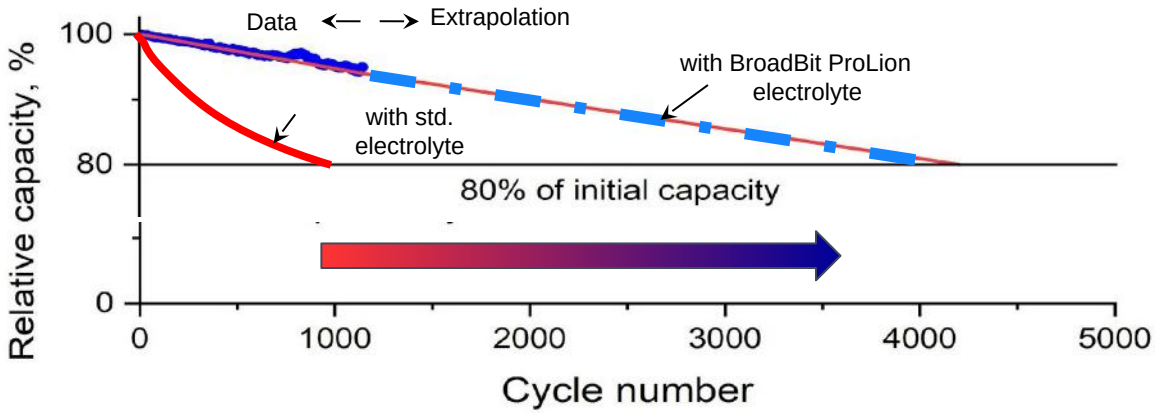
Example

Li-ion NMC

BroadBit Electrolyte

Standard Electrolyte

Increase in cycle life
80% of initial capacity



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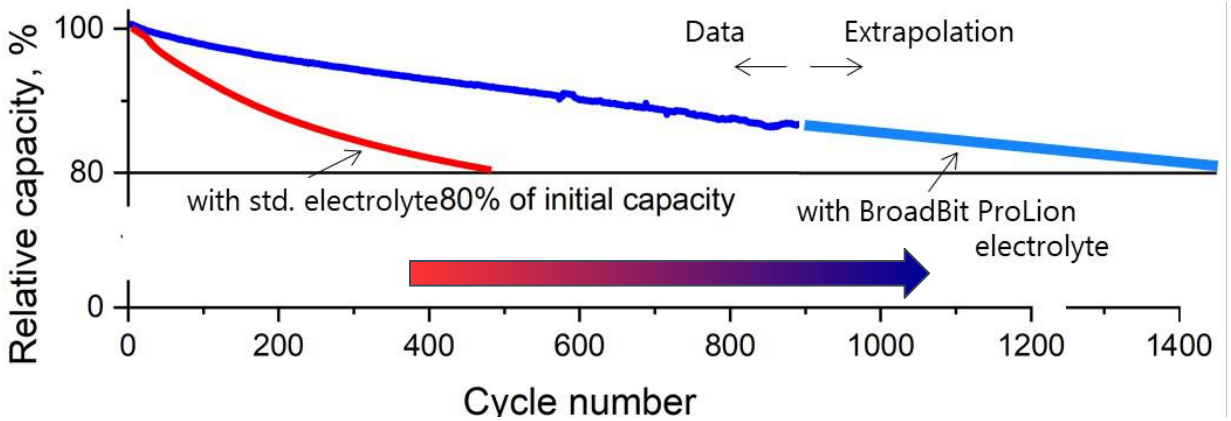
Example

Li-ion LCO

BroadBit Electrolyte

Standard Electrolyte

Increase in cycle life
80% of initial capacity



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TECHNOLODY VALIDATED AND READY TO COMMERCIALLY SCALE

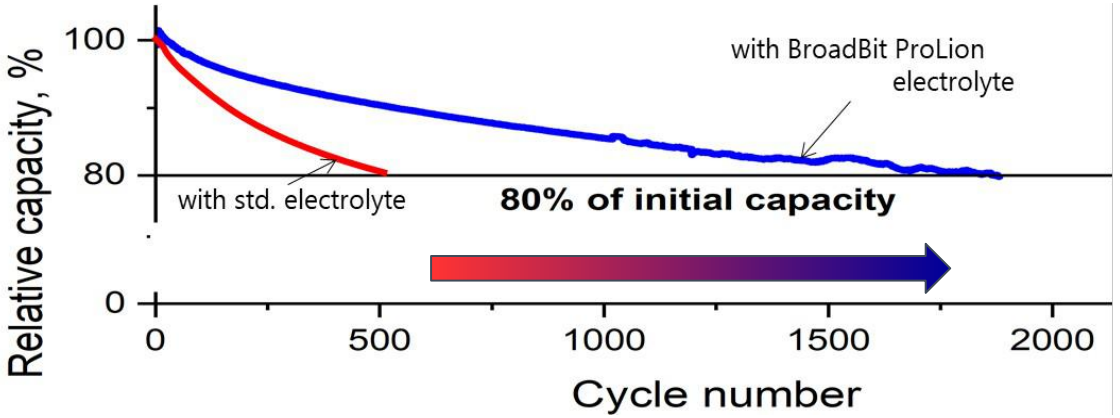
Example

Li-ion LMFP

BroadBit Electrolyte

Standard Electrolyte

Increase in cycle life
80% of initial capacity



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TECHNOLODY VALIDATED AND READY TO COMMERCIALLY SCALE

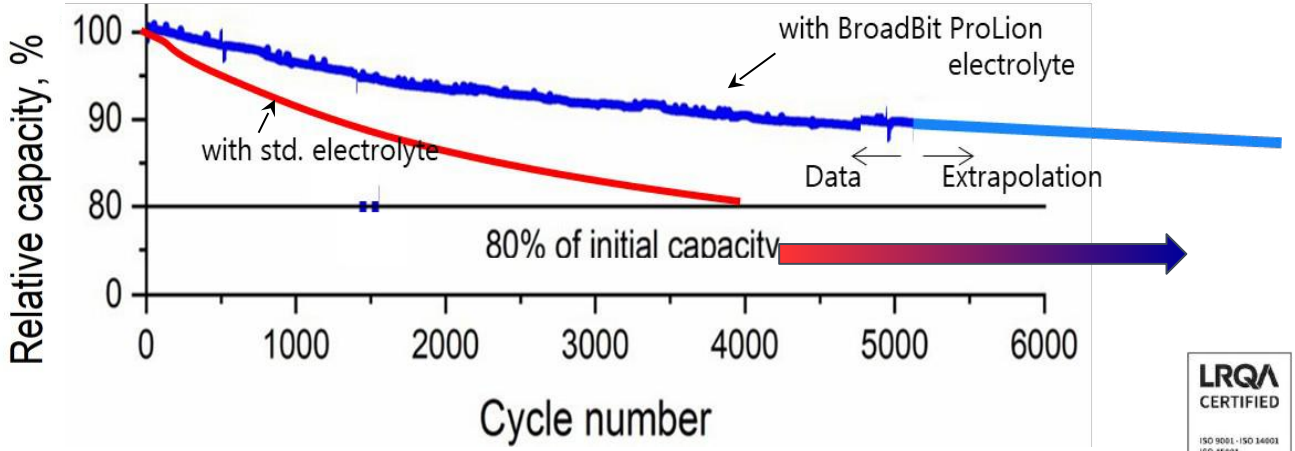
Example

Li-ion LFP

BroadBit Electrolyte

Standard Electrolyte

Increase in cycle life
80% of initial capacity



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Novel BroadBit ProLion™ Cathode (for Li-ion LFP Replacement):

- **20% Higher Energy** (discharge voltage 3.6V vs. 3.2 for Li-LFP)
- **More scalable and sustainable** (Cobalt and Nickel free)

Areal mass loading (mg/cm^2)	21±5%
Areal capacity (mAh/cm2)	2,6±5%
Recommended maximum charge voltage	4.2V vs. Li/Li+
Recommended cut-off voltage for discharge	2.5 vs. Li/Li+

Uniqueness of Broadbit's Li-ion Electrolyte technology

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- **More scalable and sustainable** (Cobalt and Nickel free)

Novel BroadBit Cathode+Electrolyte (for Li-Ion LFP Replacement):

- **Safer, More Robust, Longer Life, Higher Energy**
- **10% lower cell cost / kWh, 25% lower pack cost / kWh**

Better Battery Chemistry

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Cathode: Co & Ni Free
(TRL-9 2024)

Revolutionary (Na-Salt):
Anode, Cathode, Electrolyte:
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(TRL-5, TRL-9 2025)

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(TRL-7, TRL-9 2025)

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(TRL-6, TRL-9 2025)

Better & Cheaper Battery Manufacturing

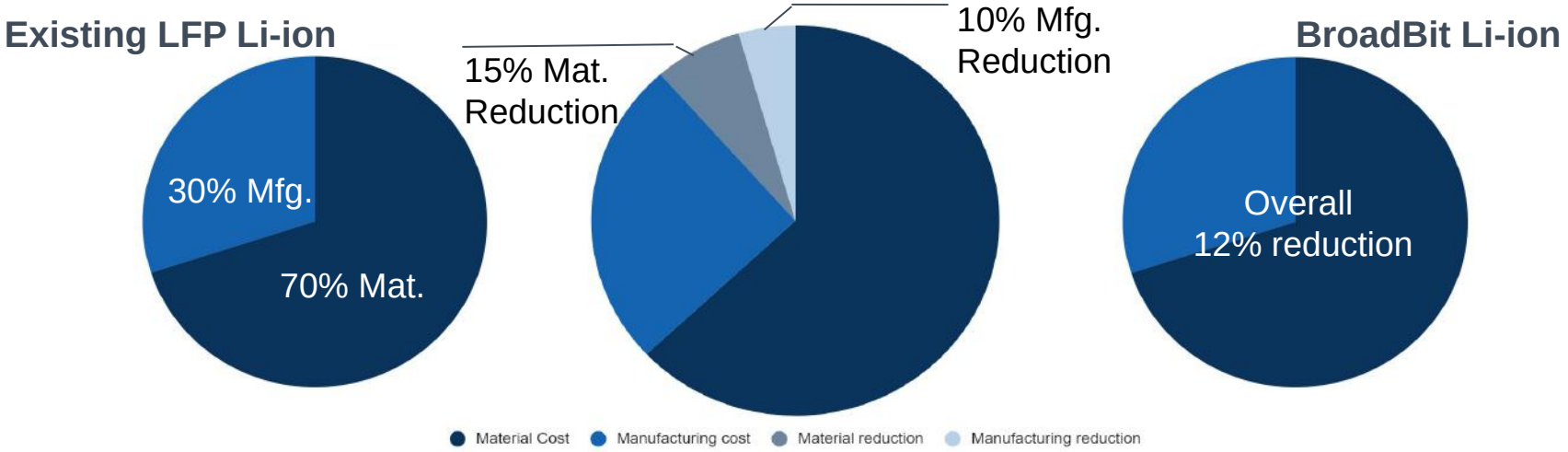
BroadBit's unique H_2O-based mfg. technology

BroadBit Wet
(H_2O-based)
Process

CapEx Cost:	15 M€	→	**<2 M€**
Energy Cost:	500 kW	→	**<100 kW**
Process Material Cost:	5 €/L	→	**0.01€/L**
Factory Area:	600 m²	→	**300 m²**
Health, Safety & Environment:	Flammable/Toxic	→	**Inert**

BroadBit's LFP replacement vs. LFP

KPI	LFP Li-ion	BroadBit Li-ion (Theoretical)
Safety	150°C self ignition	250°C self ignition
Energy Capacity	<145 Wh/Kg	155 Wh/Kg (>175 Wh/Kg possible)
Temperature Range	0°C to 60°C	-20°C to 75°C (85°C possible)



Initial: >70 $/kWh → <60 $/kWh

Levelized: >20 $/MWh → <5 $/MWh

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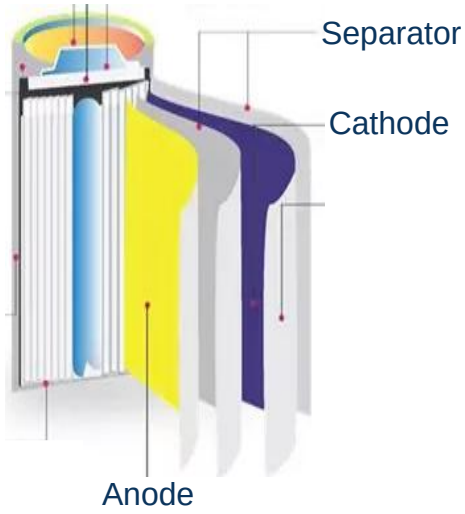
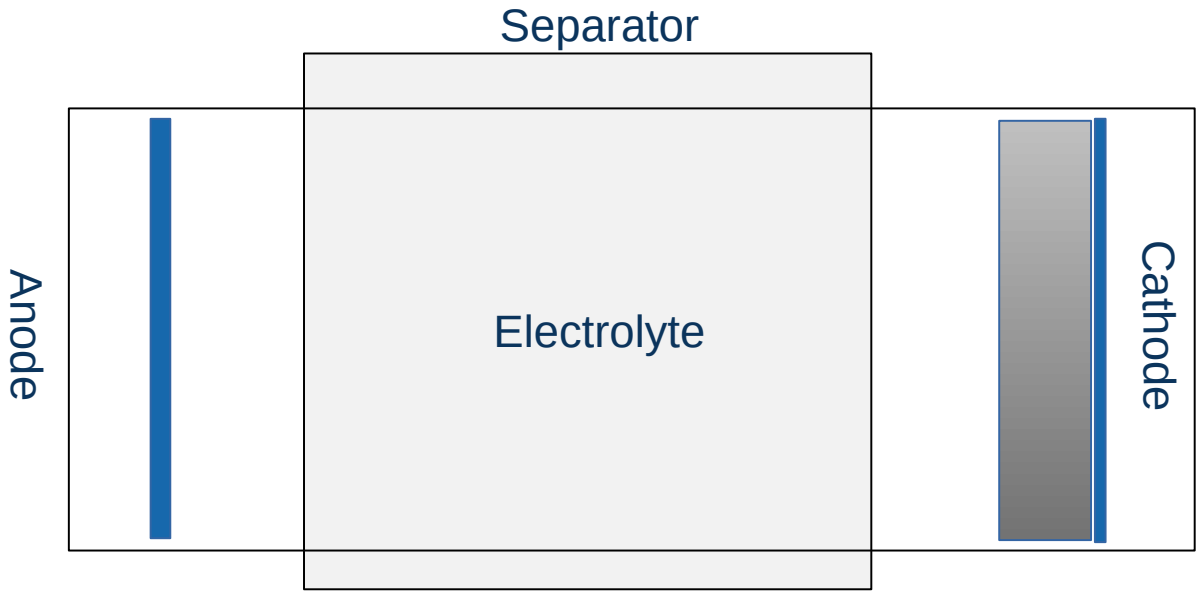
Better & Cheaper Battery Manufacturing

BroadBit's Unique Sodium Technology





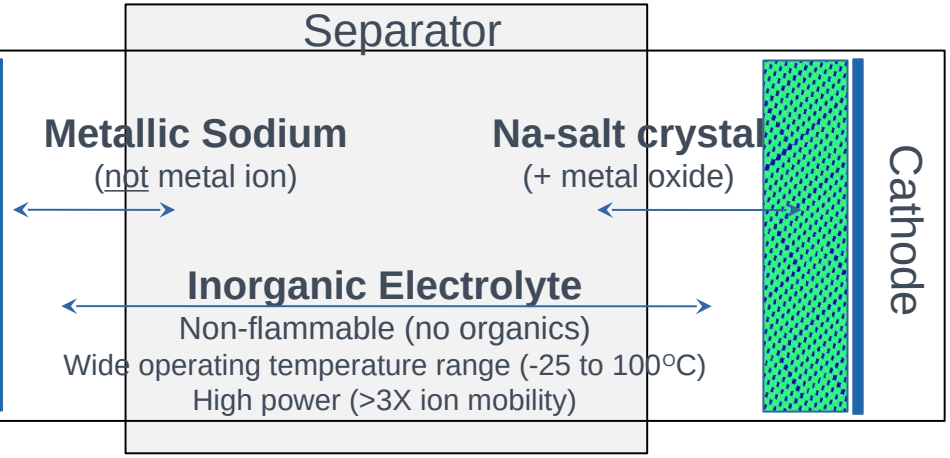
Replace all key components with low cost, safe, robust, widely available alternatives

BroadBit's Unique Sodium-Salt Technology

Unique operating principle

Superior Performance

18650-prototype cell



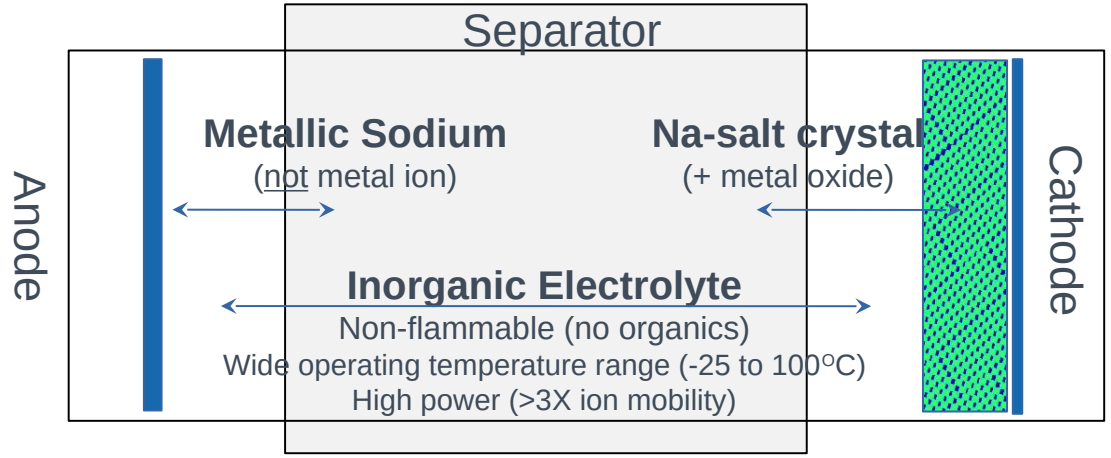
Scalable & sustainable
(no rare/toxic materials)

BroadBit's Unique Sodium-Salt Technology

Unique operating principle

Superior Performance

Low Cost



Scalable & sustainable
(no rare/toxic materials)

Hi-Energy Version

Salt (NaCl)

Sand (SiO_2)

Coal (C)

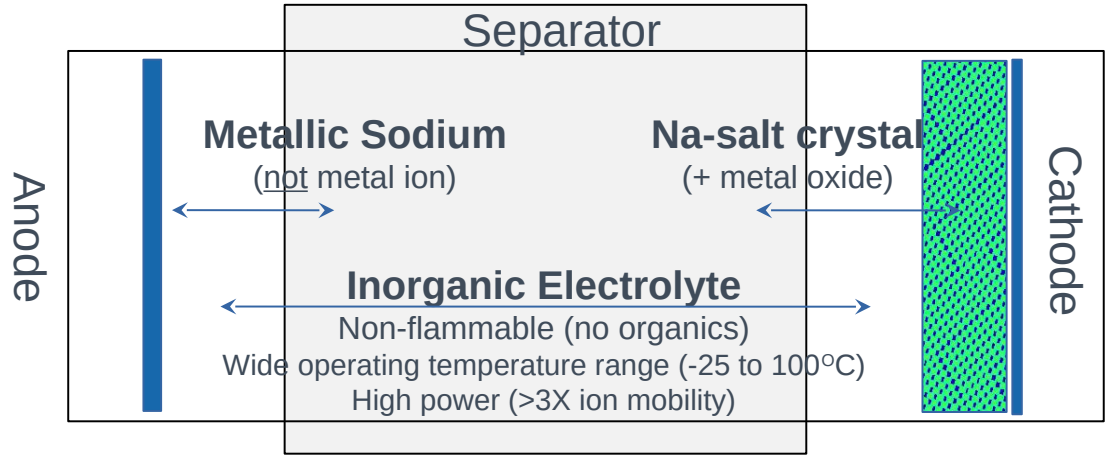
Sulfur (S)

BroadBit's Unique Sodium-Salt Technology

Unique operating principle

Superior Performance

Low Cost



Scalable & sustainable
(no rare/toxic materials)

Hi-Efficiency Version

Salt (NaCl)

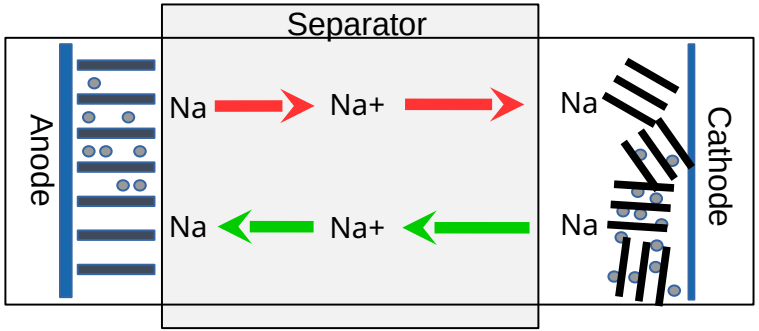
Tenorite (CuO)

Coal (C)

Sulfur (S)

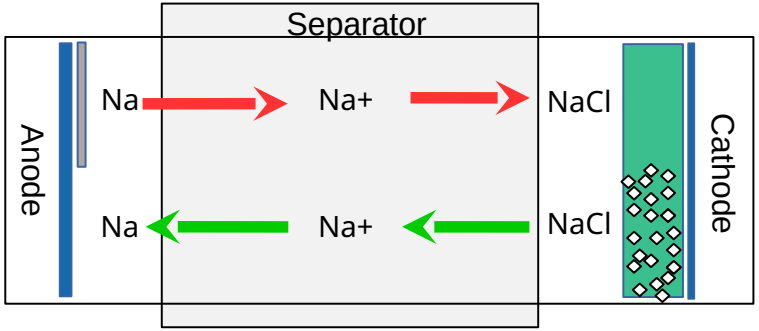
Fundamentally NOT Sodium-Ion

Sodium-ion batteries use intercalation to store charge



~150 Wh/kg
Flammable

BroadBit uses electrodeposition/crystallization to store charge



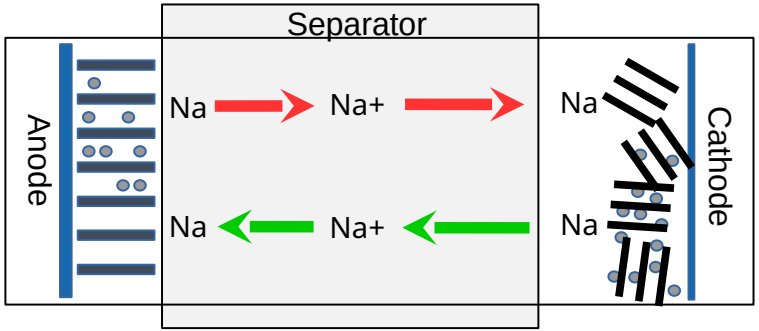
~300 Wh/kg
Non-Flammable

Na^+ = Sodium Ion (in solution) Na = Elemental (Metallic) Sodium NaCl = Sodium Chloride (crystal)

= Charge = Discharge

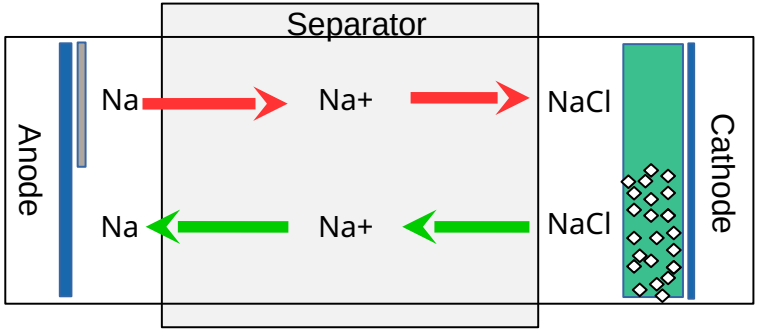
Fundamentally NOT Saltwater

Saltwater batteries use H_2O as the electrolyte solvent



~50 Wh/kg
10hr to charge

BroadBit uses SO_2 as the electrolyte solvent



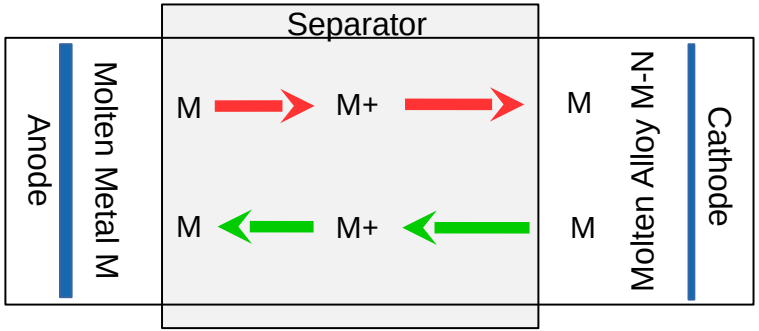
~300 Wh/kg
0.5hr to charge

Na+ = Sodium Ion (in solution) Na = Elemental (Metallic) Sodium NaCl = Sodium Chloride (crystal)

= Charge = Discharge

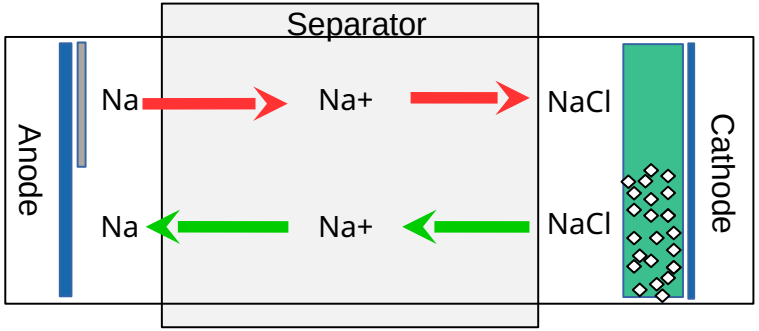
Fundamentally NOT Molten Salt

Molten salt batteries use melted salt as the electrolyte



~300 Wh/kg
>300°C operating range

BroadBit uses table salt (NaCl) as the active material



~300 Wh/kg
-20°C to 80°C operating range

Na+ = Sodium Ion (in solution) Na = Elemental (Metallic) Sodium NaCl = Sodium Chloride (crystal)

= Charge = Discharge

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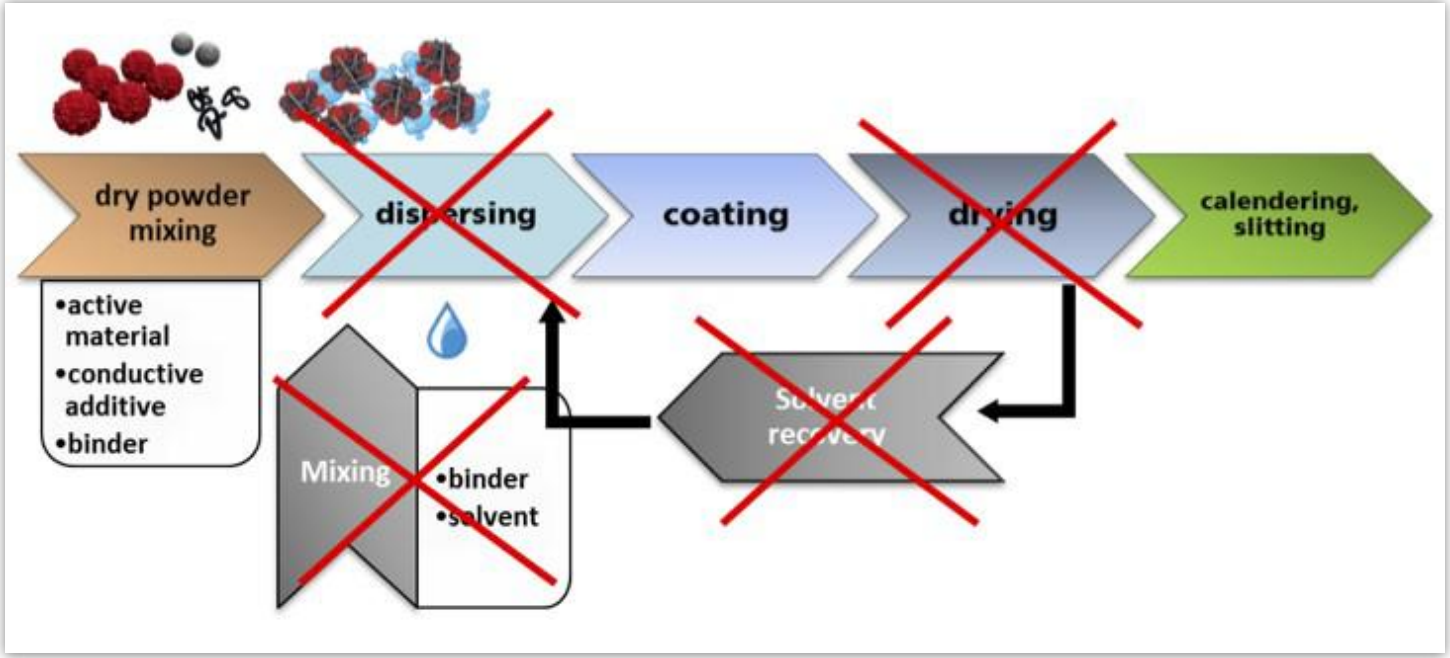
(TRL-6, TRL-9 2025)

Better & Cheaper Battery Manufacturing

Cheaper, faster, safer, greener, cathode production

Dry, solvent free, contamination resistant process



Applicable to all of BroadBit's Batteries

BroadBit's unique water-based mfg. technology

BroadBit
Dry Process

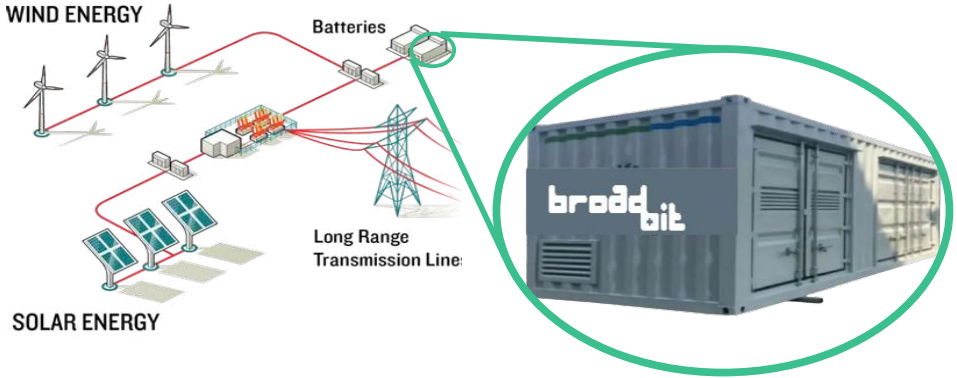
For traditional thin cathode cell architecture

CapEx Cost:	15 M€	→	**0.5 M€**
Energy Cost:	500 kW	→	**10 kW**
Process Material Cost:	5 €/L	→	**0**
Factory Area:	600 m²	→	**10 m²**
Health, Safety & Environment:	Flammable/Toxic	→	**Inert**

Uniqueness of Broadbit's Na-Salt battery technology

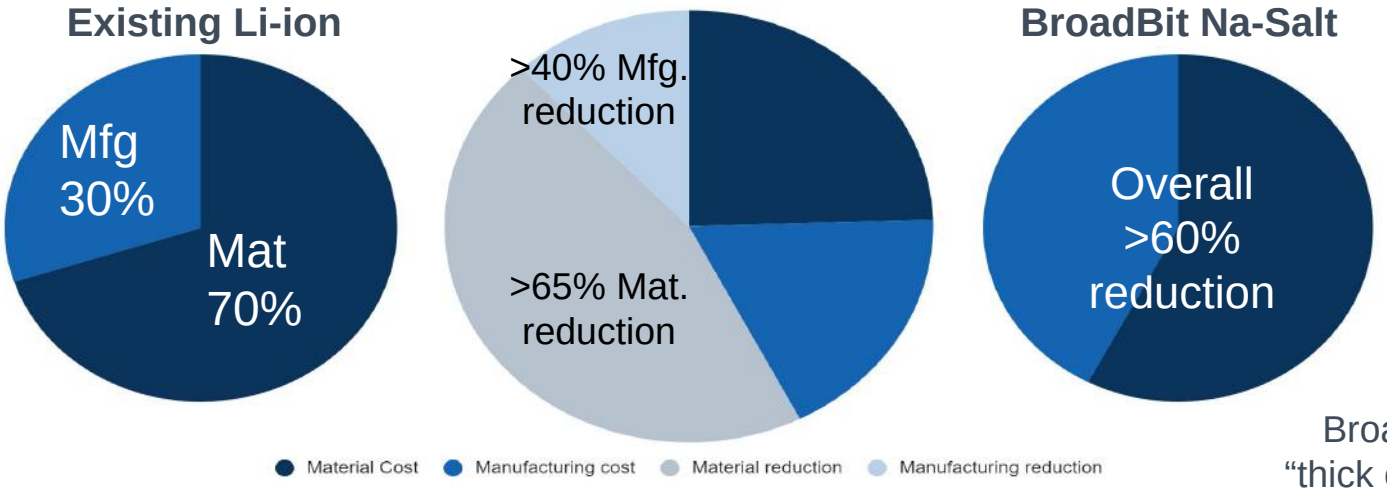
Novel BroadBit Sodium-Salt batteries (for all battery applications):

- **Safer:** Non-flammable inorganic electrolyte and environmentally friendly materials and processes
- **Lower cost & higher scalability:** Cheap, available materials and simple manufacturing
- **More durable:** Ability to operate from -25°C to 90°C without requiring heating or cooling
- **Simpler to operate:** Ability to overcharge and fully discharge without cell damage
- **More adaptable:** Platform chemistry that can be optimized for a wide variety of applications:
  - **Hi-Energy:** 300 Wh/kg, 35$/kWh for mobile applications like electric vehicles
  - **Hi-Efficiency:** 97% roundtrip efficiency, 1%/month self discharge, 25$/kWh for grid storage
  - **Hi-Power:** 5 minute charge/discharge rate, 50$/kWh for power balancing, power tools, starters



BroadBit outclasses the competition

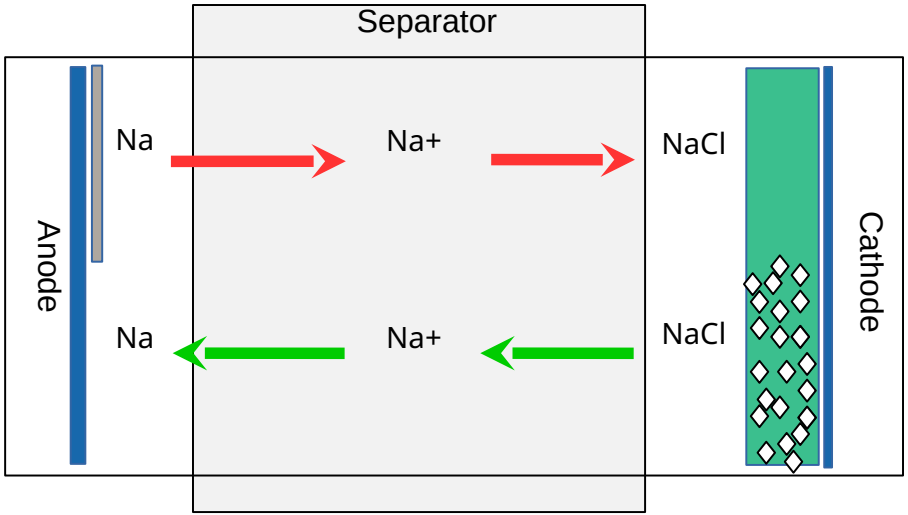
Key Parameter	Li-Ion NCA/NCM	BroadBit Na-salt (Theoretical)
Harm: Planet/People	150°C self ignition	Non-flammable/No rare Earth materials
Recharge time	2 hrs to 99%	30 mins to 99% (5 mins to 99% possible)
Energy capacity	270 Wh/kg	300 Wh/Kg (350 Wh/kg possible)
Temperature Range	0°C to 40°C	-20°C to 60°C (-30°C to 95°C possible)



>125 $/kWh → <30 $/kWh

BroadBit's "thick cathode" format

Using the same core concept, BroadBit's Na-Salt cell chemistry can be optimized for various applications:



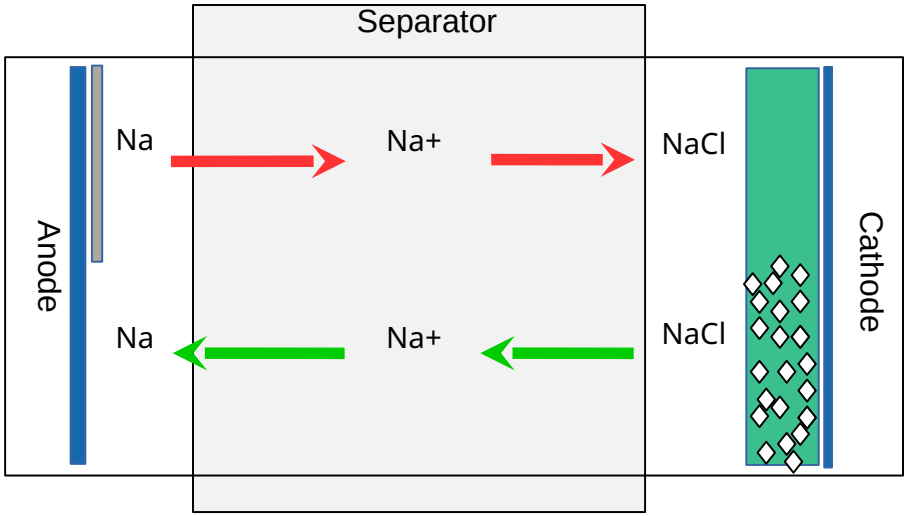
High energy density
300 Wh/kg vs. 270 for Li-ion
e.g., electric vehicles

High energy efficiency
97% efficient vs. 91% for Li-ion
e.g., energy storage systems

High power density
5-min charging vs. 30 for Li-ion
e.g., starter, drones & power tools

BroadBit Sodium-Salt batteries are flexible

Using the same core concept, BroadBit's Na-Salt cell chemistry can be optimized for various applications:



Future application

First target application (LDES)

High energy efficiency

97% efficient vs. 91% for Li-ion

e.g., energy storage systems

Long Duration Energy Storage

Future application

LDES is the fastest growing, least served battery market

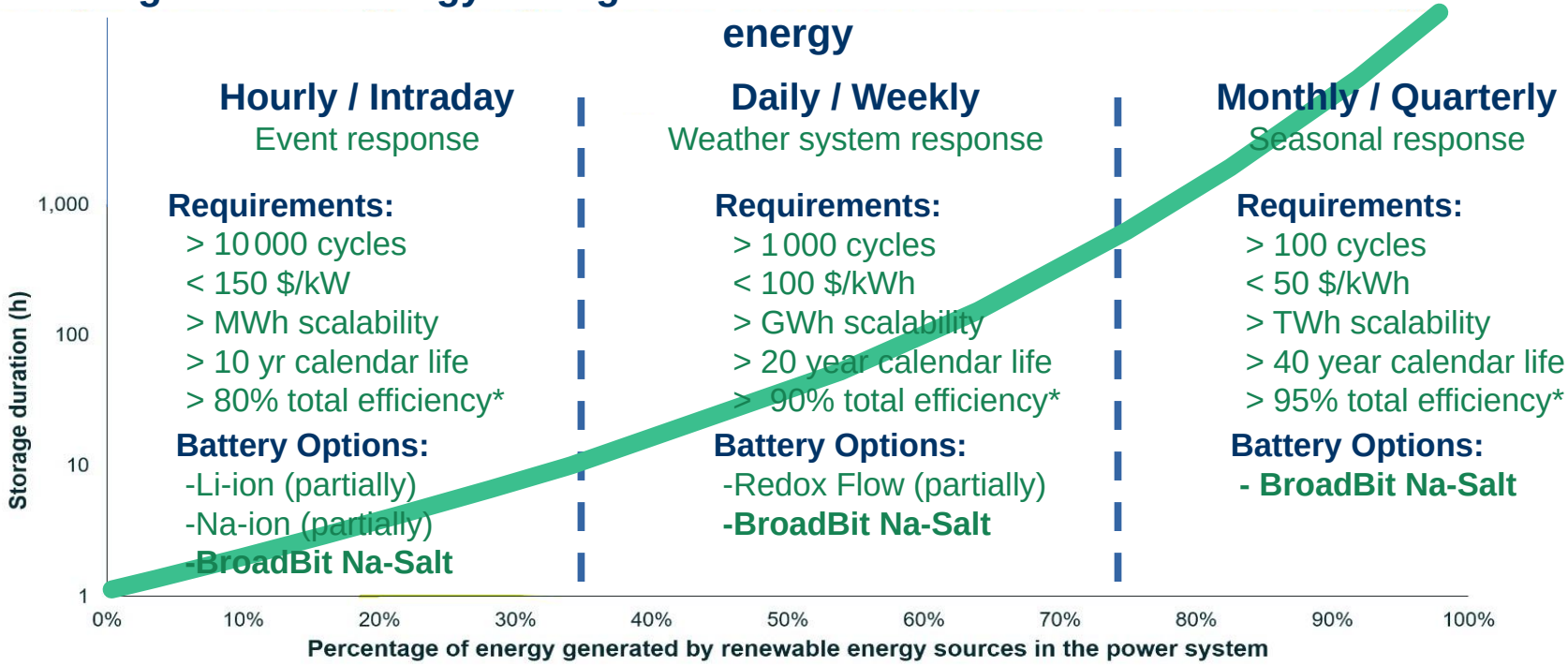
Currently 25B$
Growing at 27% / year
250B$ by 2045
Largest application by 2050

First target application (LDES)

High energy efficiency
97% efficient vs. 91% for Li-ion
e.g., energy storage systems
Long Duration Energy Storage

Why is LDES important?

Long Duration Energy Storage enables the shift towards 24/7 wind and solar energy



Hourly / Intraday
Event response

Requirements:
- > 10 000 cycles
- < 150 $/kW
- > MWh scalability
- > 10 yr calendar life
- > 80% total efficiency*

Battery Options:
- -Li-ion (partially)
- -Na-ion (partially)
- **-BroadBit Na-Salt**

Daily / Weekly
Weather system response

Requirements:
- > 1 000 cycles
- < 100 $/kWh
- > GWh scalability
- > 20 year calendar life
- > 90% total efficiency*

Battery Options:
- -Redox Flow (partially)
- **-BroadBit Na-Salt**

Monthly / Quarterly
Seasonal response

Requirements:
- > 100 cycles
- < 50 $/kWh
- > TWh scalability
- > 40 year calendar life
- > 95% total efficiency*

Battery Options:
- **- BroadBit Na-Salt**

* Round trip + self discharge

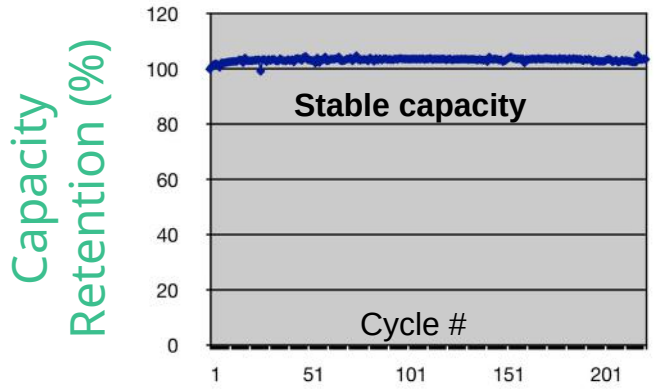
from Sumitomo

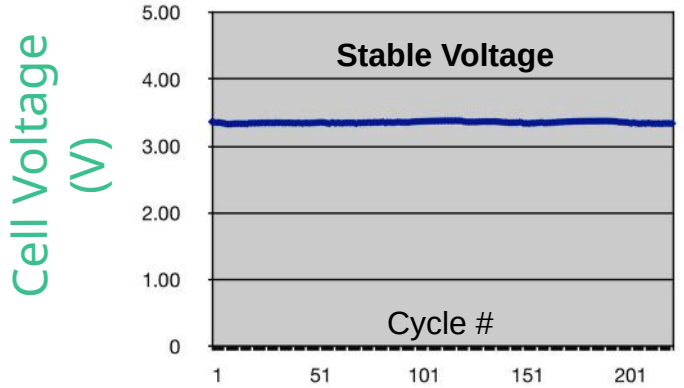
Why choose LDES as the first market?

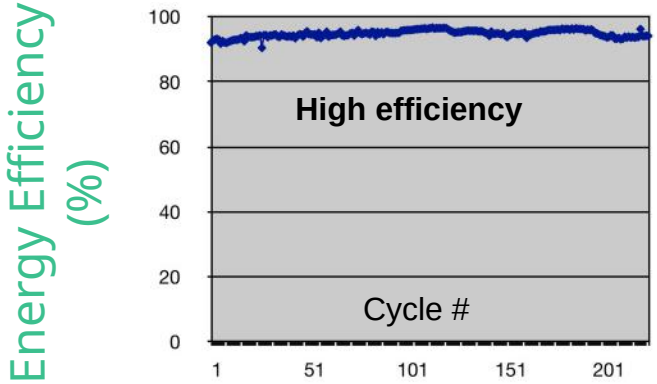
BroadBit Na-Salt battery beats the competition on all key metrics

Key Metric	Lead Acid	Li-ion (LFP)	Redox Flow	Na-ion	BroadBit Na-Salt
Harm	Toxic	Toxic/Flammable	Toxic/Flammable	Toxic/Flammable	Non-toxic/non-flammable
Scalability	Lead limited	Lithium limited	Vanadium limited	Essentially unlimited	Essentially unlimited
Efficiency (losses)	80% (20%)	91% (9%)	75% (25%)	91% (9%)	97% (3%)
Self Discharge	5%/month	3%/month	1%/month	3%/month	1%/month
Temperature Range	-40 - 50 °C	-0 – 45 °C	-10 – 40 °C	-0 – 45 °C	-25 – 80 °C
Calender Life	10 years	20 years	15 years	20 years	50 years
Discharge Limit	50%	30%	10%	30%	0%
Overcharging Effect	Permanent damage	Explosion	Permanent damage	Explosion	Heating
Cost	75 $/kWh	125 $/kWh	100 $/kWh	100 $/kWh	25 – 30 $/kWh
Cycle Life	100	5000	10000	1000	500

BroadBit's durable/efficient chemistry

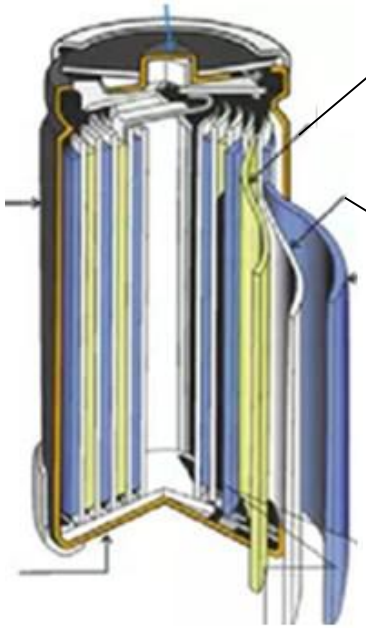






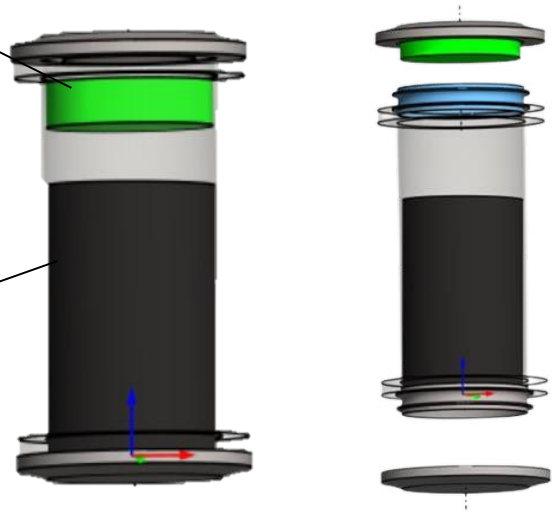
BroadBit's simplified battery design

Traditional Li-ion or Na-ion



0.01 cm thick cathode

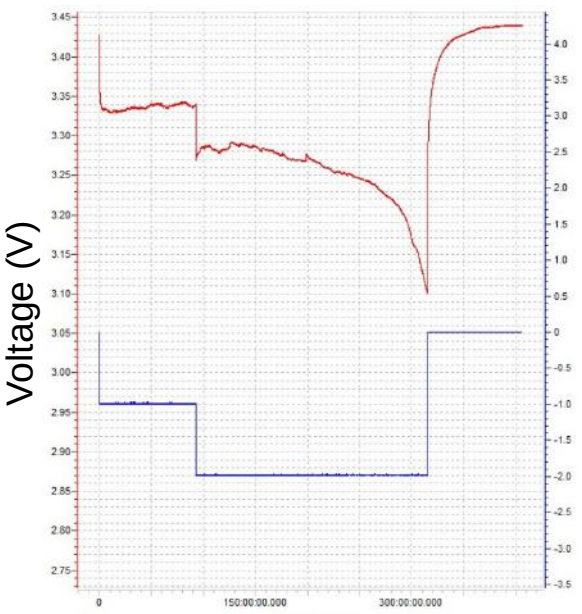
Na-Salt LDES



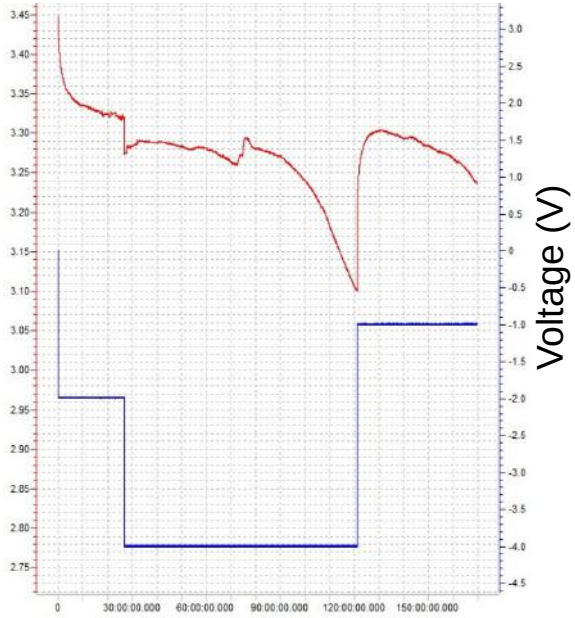
5 cm thick cathode

BroadBit's thick cathode LDES

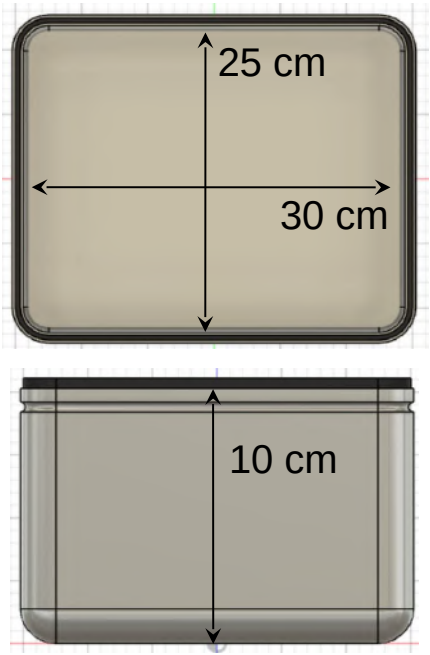
1 cm cathode

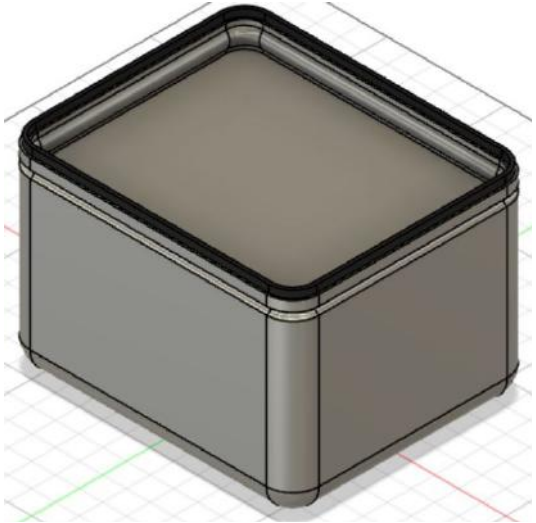


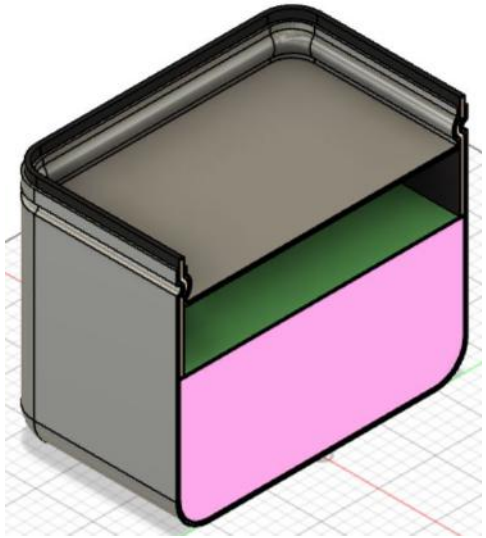
2 cm cathode



25Kg Cell Concept

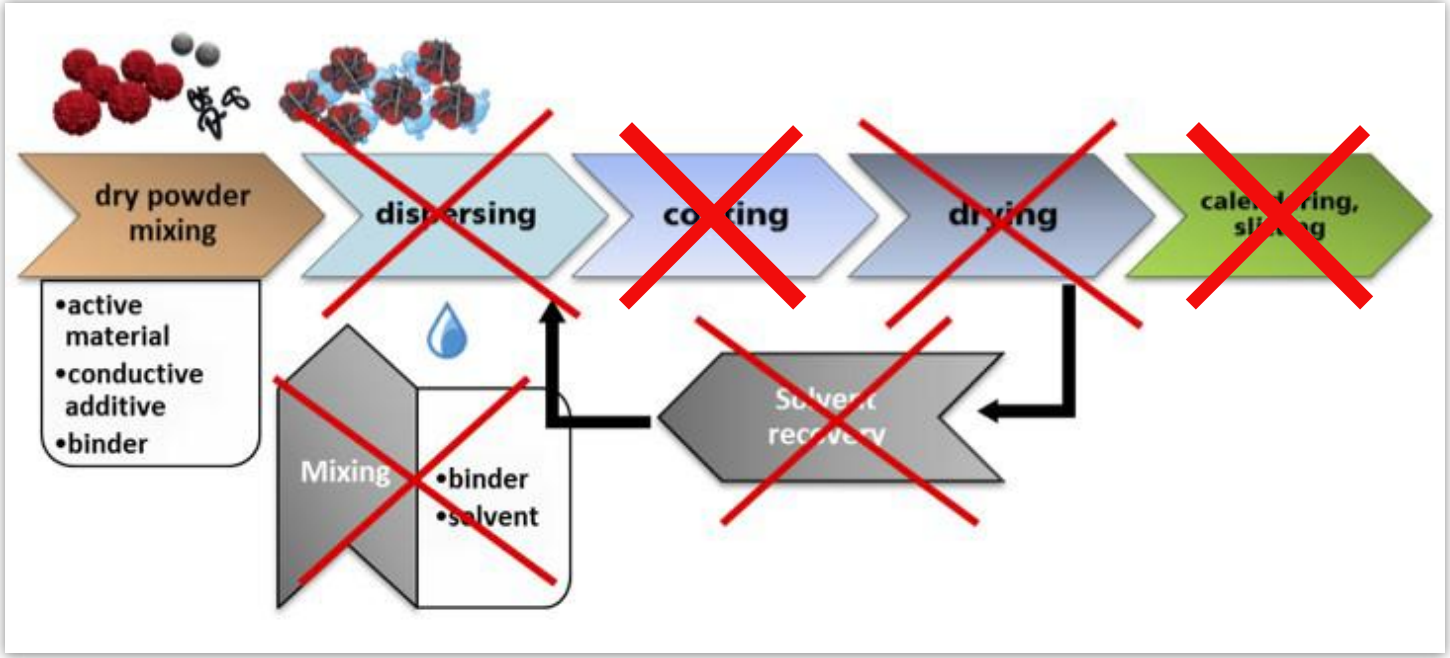




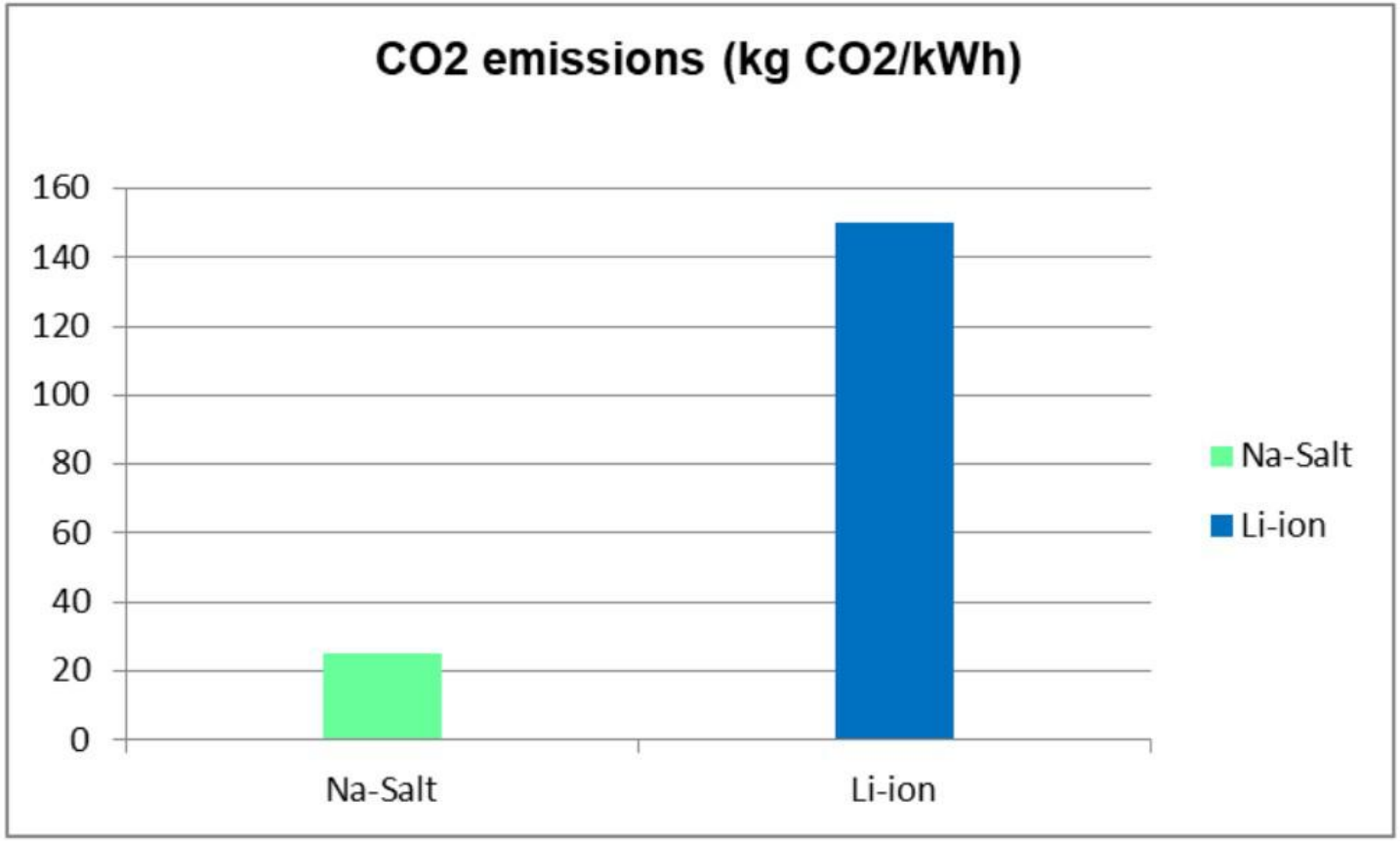


Thick cathode cell format

Further simplifies manufacturing, reducing cost to below 30$/kWh



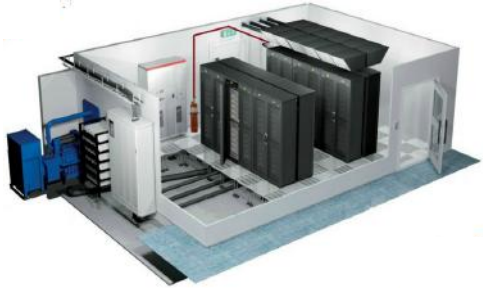
CO_2 Emmisions Reduction vs. Li-ion

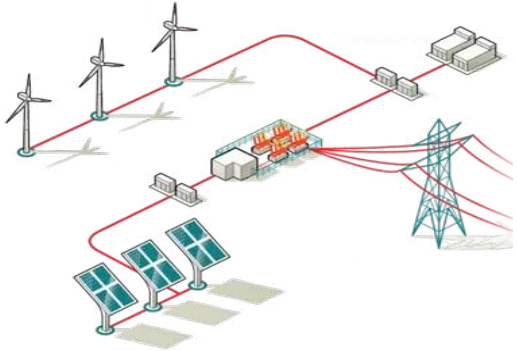


Sodium-Salt LDES Battery Customers

Essentially the same cell can be used for multiple huge markets, addressed in stages

- **House batteries** for e.g. homes, ships and recreational vehicle such as campervans and boats
  - Currently ~1 B$/yr market growing at ~5%/yr
- **Uninterupted Power Supplies (UPSs)** for e.g. data centers, factories, hospitals
  - Currently ~10 B$/yr market growing at ~10%/yr
- **Grid Storage** enabling increased fraction of intermittant wind and solar in the energy mix
  - Currently ~25B$/yr market growing at ~25%/yr





BroadBit's LDES Na-Salt battery

Current Technology Status

- Technology validated in commercial std. cells (18650 and larger)
- Years of cycling data

Existing Technology Advantage

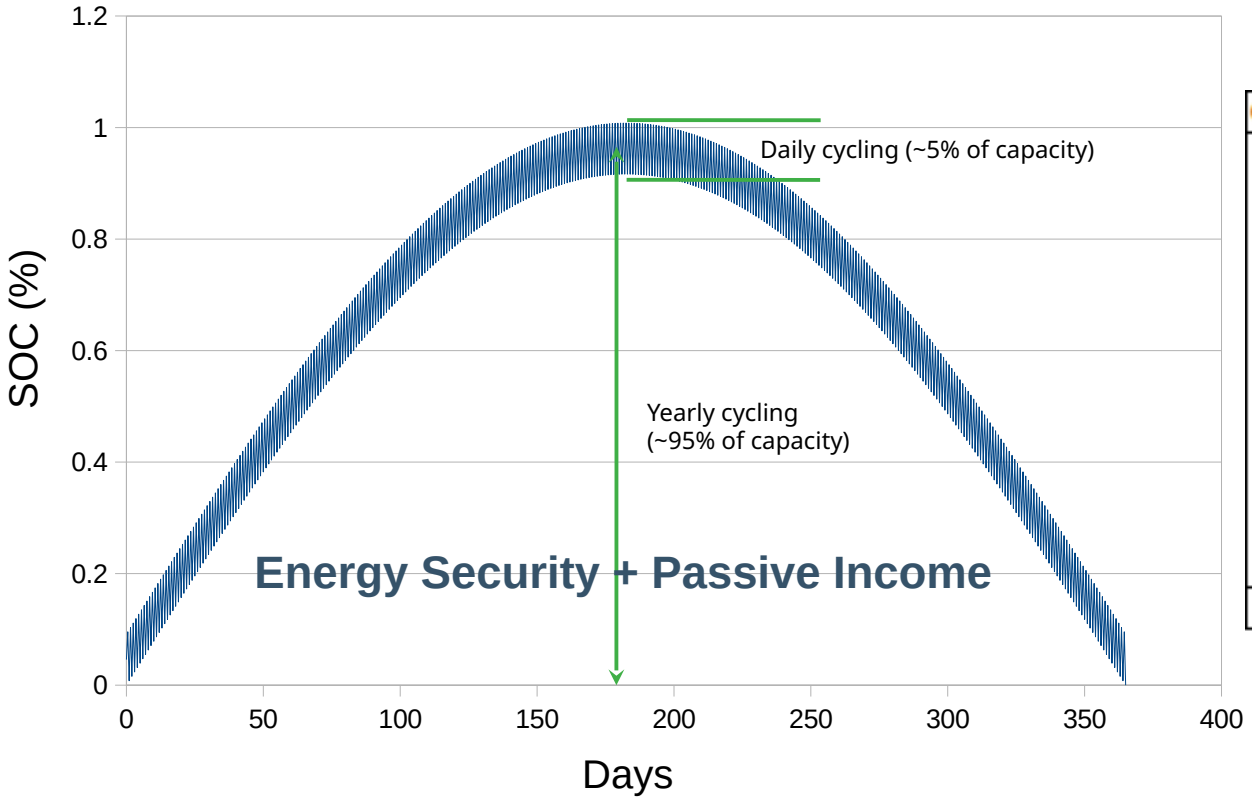
- Exceptionally High: Efficiency
  Power
  Safety
  Scalability/Sustainability
- Exceptionally Low: Self discharge
  - Materials, processing & assembly costs

Technology Introduction Strategy

- Already meet ALL key requirements for a Long Duration Energy Storage (LDES) battery
- Ready to begin field trials

Every GWh of LDES (30M$ investment) generates 150M$ of savings

World's 1st Hybrid Daily / Seasonal Battery



Combined seasonal and daily
365 days/yr
5.13% discharge/d
50 yr/life
1.003 charges/d
366 Partial charges/yr
18300 Partial charges/life
960 Full charges/life
17.6 €/kWh (cost)
0.018 €/kWh/life
1.08 €/kWh (avg. Germa
98% margin
0.85 Payback time (yrs)

Where we stand

After years of research and development, BroadBit is ready to introduce its battery technology to the market

ProLion™ Electrolyte

- 4 years of R&D
- 1 M€ invested
- 20 Patents granted
- 5 L/day capacity
- 1000 cells produced
- 5 customers testing
- **Ready for commercial scaling**

Sodium-Salt Batteries

- 10 years of R&D
- 8 M€ invested
- 40 Patents granted
- 5 Cells/day capacity
- 5000 cells produced
- 10 prospects considering
- **Ready for field trials**

>90 Patents in process (~60 already granted)

#	Description	Status	Priority	WO, PCT Numbers (ID)
1 a	ELECTROCHEMICAL SECONDARY CELLS FOR HIGH-POWER BATTERY USE -High power NaCl with $NaBF_4$ or $NaBH_4$	**FIN**	2015.09.30	WO2017/055678A1, PCT/FI2016/050133 (99077LN)
1 b	ELECTROCHEMICAL SECONDARY CELLS FOR HIGH-ENERGY BATTERY USE -Discharge state assembled, high energy sodium / sodium salt	PCT, EUR, **USA**, **JAP**, **KOR**, CHN, CAN, **ISR**, **RUS**, **BRA**, **IND**, TWN	2015.09.30	WO2017/055678A1, PCT/FI2016/050133 (99077LN)
2	RECHARGEABLE SODIUM CELLS FOR HIGH ENERGY DENSITY BATTERY USE -Non-aqueous electrolyte, SO_2 additive and SEI forming salt	**FIN**, PCT, EUR, USA, **JAP**, KOR, **CHN**, CAN, IND, **IND**, **HNK**, **TWN**, **ISR**, **RUS**, AUS, **MEX**, BRA, **PER**	2016.03.04	WO2017/149204, PCT/FI2017/050139 (99096LN)
3	ELECTROLYTE FOR SUPERCAPACITOR AND HIGH-POWER BATTERY USE -NaClO4 electrolyte in nitrile solvent	**FIN**, PCT, **TWN**, EUR, USA, **JAP**, **KOR**, CHN, **IND**, ISR, **AUS**, **BRA**, CAN, **MEX**, PER, **RUS**	2017.03.17	WO2018/167365, PCT/FI2018/050182 (105598LN)
4	IMPROVED ELECTROCHEMICAL CELLS FOR HIGH-ENERGY BATTERY USE -Anode current collector for SO_2 solvent with C-coated metal/alloy	**FIN**, PCT, TWN, **USA**, EUR, JAP, **KOR**, CHN, **IND**, **IDO**, RUS, **ISR**, **AUS**	2017.08.04	WO2019025663A1, PCT/FI2018/050571 (107989LN)
5	A DISCHARGE STATE ASSEMBLED RECHARGEABLE ELECTROCHEMICAL CELL COMPRIZING METALLIC ELECTRODES -Discharge state assembled metal-metal battery.	**FIN**, PCT, USA, EUR, JAP, KOR, CHN, IND	2018.09.17	WO2020058572A1, PCT/FI2019/050663 (114412LN)
6	IMPROVED RECHARGEABLE BATTERIES AND PRODUCTION THEREOF -Electrolyte with Carbonate – Nitrile solvent with alkali salt	FIN, PCT, USA, **EU (20 states)**, JAP, KOR, CHN, IND	2018.10.02	WO2020070391A1, PCT/FI2019/050714 (114723KM)
7	IMPROVED ANODE MATERIAL AND ANODE FOR A RECHARGEABLE BATTERY -Composite anode of metal matrix and distributed material	**FIN**, PCT, **USA**, EUR, JAP, KOR, CHN, **IND**	2018.10.10	WO2020084197A1, PCT/FI2019/050759 (114857LN)
8	AN ELECTRODE MATERIAL AND COMPONENTS THEREFROM AND PROCESSES FOR THE MANUFACTURE THEREOF -Dry blends and pastes and manufacturing methods for batteries	FIN, PCT, USA, EUR, JAP, KOR, CHN, IND, BRA, ISR, TWN, **RUS**	2019.08.13	WO2021028619A1, PCT/FI2020/050525 (119960KM)
9	IMPROVED ELECTROLYTE FOR ELECTROCHEMICAL CELL -An electrolyte comprising a solvent comprising at least two carbonate solvents	FIN, PCT, USA, EUR, CHN, JAP, KOR, TWN, RUS, IND, CAN, ISR, BRA, PER	2020.06.26	WO2021260274A1, PCT/FI2021/050493 (139177LN)

Applied, Acceptance soon, Accepted, **Granted**

Most Important Granted Main Claims

An electrochemical cell comprising: a cathode comprising a sodium-containing material, and an anode; and
b) an electrolyte comprising a solvent and a sodium salt positioned between the cathode and the anode, wherein the solvent of the electrolyte comprises sulfur dioxide (SO_2) or ammonia (NH_3) and/or an organic amine.

An electrochemical cell comprising: a) a cathode and a rechargeable metallic sodium anode; and
b) a non-aqueous electrolyte which comprises an SO_2 additive and at least one electrolyte salt which participates in the anodic SEI formation together with the SO_2 additive positioned between the cathode and the anode.

An electrochemical cell comprising: a) a cathode and a rechargeable metallic sodium anode; and
b) an electrolyte which comprises a sufficient amount of dissolved SO_2 for a stable SEI (Solid Electrolyte Interface) formation and at least one electrolyte salt which is soluble to at least 1.2 molar concentration positioned between the cathode and anode.

An electrochemical cell comprising: a) a cathode and an anode; and
b) an electrolyte positioned between the cathode and anode comprising:
1. one or more nitrogen-containing solvent precursors and
2. at least one salt comprising a Na cation and a B, Al, P or a Cl cored anion or a sulfonyl or sulfonate containing anion.

An electrochemical cell for a secondary battery or supercapacitor, wherein the electrolyte comprises a solution of $NaBF_4$ or $NaBH_4$ salt in ammonia, having approximate formulas of $NaBF_4 \cdot 2.5\ NH_3$ and $NaBH_4 \cdot 1.5\ NH_3$ respectively.

An electrochemical cell comprising a nitrile-based solvent based electrolyte wherein, the electrolyte comprises one or more electrolyte salts, wherein at least one of the one or more electrolyte salts is $NaClO_4$ and the total Molar concentration of all electrolyte salts is greater than 2 M and less than or equal to 3.5 M.

An electrolyte for an electrochemical battery cell comprising: i. a carbonate : nitrile type solvent mixture based electrolyte, wherein the electrolyte comprises at least one polymer additive; or ii. a dimethylcarbonate : malononitrile solvent mixture based electrolyte or a dimethylcarbonate : succinonitrile : malononitrile solvent mixture based electrolyte, wherein the electrolyte comprises an alkali salt and the electrolyte is liquid during electrochemical operation.

An electrochemical cell, wherein the active cathode material comprises partially oxidized Na_2S.

A discharge state assembled rechargeable electrochemical cell, which, when in discharged state, comprises only an electrically conductive anodic current collector as an anode and a cathode that comprises only metallic material as active material and, wherein a solid metallic deposit is formed on and/or in the anodic current collector during charging and wherein an ion-exchange structure is situated between the anodic current collector and cathode.

An anode current collector for a rechargeable electrochemical cell having an SO_2 solvent based electrolyte comprising a carbon coated metal, an alloy of two or more metals or a carbon coated alloy of two or more metals, wherein the SO_2comprises at least 25% mole fraction mole fraction of the employed solvent materials and wherein one or more alkali metals are deposited in metallic form on the current collector during charging.

An electrochemical cell comprising, at least, the anode and the electrolyte ... (above), and a cathode.

A process mixture (9) for use in and/or for the manufacture of dry film for an article used in an electrochemical device (40), the process mixture comprising:
i. one or more reactive materials and/or reactive composites, wherein the reactive composite comprises one or more reactive materials and one or more matrix materials; and
ii. one or more binders, wherein:
a) the process mixture is a wet paste; or
b) the process mixture is a dry blend and one or more of the reactive materials comprises a salt comprising a metal-containing cation and an anion.

Customer pipeline and first income

NDA Level Discussions, LOIs & Samples

Over 200 global cell assemblers, battery manufacturers and OEMs

Partnerships & 1st sales (500k€ to date)

Over 20 global cell assemblers, battery manufacturers and distributors

Vol. Sales/Licensing Negotiations

3 global cell assemblers, material manufacturers and distributors

Signed Production/Cooperation Agreements

YASKAWA EXISTUNG REVESI ABERTAX® TECHNOLOGIES Jiangsu Funeng Science and Technology

~1000 m² on 2 floors

2nd floor: Offices, cell assembly, testing and chemistry labs

1st floor: Cathode and electrolyte production, electronics and machine shop

BroadBit HQ, Orapihlajatie 37, Helsinki, Finland

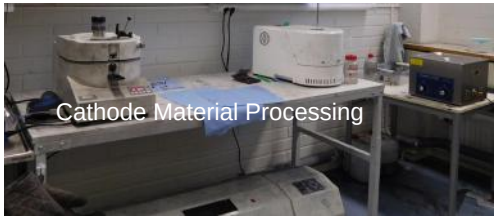
~1000 m² on 2 floors

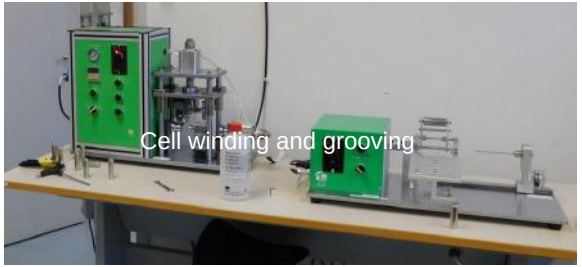
2nd floor: Offices, cell assembly, testing and chemistry labs

1st floor: Cathode and electrolyte production, electronics and machine shop

BroadBit HQ, Orapihlajatie 37, Helsinki, Finland

Capability: Raw materials to tested cells





BroadBit's business model

CapEx light: Elimating 95% of CapEx

High margin: Focusing on high value components

BroadBit in-house production | **Outsourced production**

Electrolyte → Anodes + Cathodes → Cells → Battery Packs

Components

Thick cathode cells LDES Na-salt only

BroadBit has an experienced team

David Brown, PhD (CEO):

Founder & founding CEO of 6 startups, head of 2 research labs, Fulbright Fellow with >300 patents and over 50 M€ raised and managed, 1 NASDAQ IPO.

Andras Kovacs, MSc (CTO):

Founder & founding CEO of 2 startups, editor of the EV Recharging Reservation standard, original inventor of the BroadBit technology.

Riikka Kaijansinkko, MSc (CFO):

Managing Director and Financial Director of several leading Finnish companies with over 25 years experience in hardware companies.

Artem Faustov, PhD (Ch Chem):

15 years industrial experience in lithium and sodium battery and battery component development and manufacturing

Yrjö Neuvo, PhD (Prof.):

Former CTO of Nokia and Member of Nokia Group's board of directors (Advisor)

Tapani Alasaarela, PhD (Eng):

Founding CEO of 1 startup. Co-developing the world's 1st commercial R2R Atomic Layer Deposition (ALD) reactor.

StreamWise CANATU TEICOS PHARMA ALMAKOR broadbit TURCK ENSTO Lemminkäinen NOKIA nanobakers

LRQA CERTIFIED ISO 9001 · ISO 14001 ISO 45001

BroadBit seeks visionary partners

Investments to date:

3000 k€ private YASKAWA + Angel Investors

5000 k€ public HORIZON 2020 Tekes BUSINESS FINLAND esa European Innovation Council

Income to date:

500 k€ from samples, demos and PoCs

+ leading battery, automotive and government customers

AIRBUS kapsch challenging limits VULCAN CONFIDENTIAL

Minimum funding goals:

4.5 M€ Q1 2025: Market entry for 1st niche Li application + Complete Na R&D

9.0 M€ (+8M€) Q4 2025: Scale 1st volume Li application + Pilot 1st Na application

Cash flow positive in 2027 and 300 M€ revenue by 2029

Investment amount and use of funds

Stage 1

- 4.5 M€ in Q1 2025

- 1.5 M€ to be matched by a 2.5M€ European Innovation Council (EIC) Accellerator grant

  For completing: R&D on first Na-Salt battery application (LDES)

- 3.0 M€ (hopefully) to be matched by a European Commission Innofund grant (under preparation)

  For completing: First commercial scaling of ProLion™ Li-ion electrolyte (1 ton/day)

Estimated revenue from investment: >10 M€/yr

Stage 2

- 9.0 M€ in Q4 2025

- 8 M€ to be matched by an 8 M€ European Innovation Council (EIC) equity investment

  For completing: First pilot production of Na-Salt LDES battery

Estimated revenue from investment: >100 M€/yr

P&L, margins and payback time projections (base)

P&L, k€	2024	2025	2026	2027	2028	2029	2030	2031
Volume (of which)								
Li-ion electrolyte (Tons)	0	196	601	832	1,052	1,298	1,508	1,573
Sodium-Salt LDES cells (kcell)	0.0	0	68	588	1,448	3,642	25,751	169,154
Price (of which)								
Li-ion electrolyte (€/kg) 1a	34.6	21.5	14.6	9.7	9.2	9.2	9.2	9.2
Sodium-Salt LDES cells (€/cell) 3	226	125	110	98	86	75	65	60
Revenues (of which)	**0**	**7,183**	**22,348**	**71,556**	**140,874**	**292,977**	**1,618,343**	**10,210,284**
Li-ion electrolyte sales (k€) 1a	0	7,131	14,843	13,664	16,404	20,245	20,245	23,527
Sodium-Salt LDES cell sales (k€) 3	0	52	7,505	57,892	124,470	272,733	1,598,098	10,186,757
CapEx (of which)	**2,729**	**9,051**	**20,717**	**26,321**	**52,639**	**89,122**	**370,397**	**2,461,909**
Li-ion electrolyte Equipment (k€)	2,560	4,985	2,000	2,000	2,000	1,500	2,000	2,000
Sodium-Salt Electrolyte Equipment (k€)	9	744	8,487	7,493	10,899	12,912	34,297	35,659
Sodium-Salt Cathode Material Equipment (k€)	160	3,322	10,230	16,828	39,741	74,710	334,100	2,424,250
Material costs (of which)	**10**	**804**	**10,657**	**34,750**	**82,341**	**198,100**	**1,286,566**	**9,120,431**
Li-ion electrolyte sales (k€) 1a	3	637	1,858	2,476	3,036	3,645	4,181	4,342
Sodium-Salt LDES cell sales (k€) 3	7	167	8,799	32,274	79,305	194,454	1,282,384	9,116,089
Gross Margin	**-24**	**4,498**	**13,891**	**40,310**	**72,640**	**131,471**	**571,480**	**3,014,412**
Selling, General and administrative expenses	-212	-363	-583	-957	-1,297	-1,817	-3,993	-9,627
R&D expenses	-727	-955	-603	-697	-790	-884	-977	-1,070
Other operational expenses	-100	-120	-218	-274	-412	-515	-644	-805
EBITDA	**-1,063**	**3,059**	**12,488**	**38,382**	**70,141**	**128,256**	**565,866**	**3,002,910**
Depreciation and amortization	-378	-1,967	-5,721	-10,886	-20,776	-37,862	-103,545	-576,141
Interest	-11	-12	-11	-10	-8	-5	-2	-1
Other revenues/expenses	727	955	603	0	0	0	0	0
EBT	**-725**	**2,036**	**7,358**	**27,486**	**49,358**	**90,389**	**462,318**	**2,426,768**
Taxes	0	0	-1,140	-5,497	-9,872	-18,078	-92,464	-485,354
Net Income	**-725**	**2,036**	**6,218**	**21,989**	**39,486**	**72,311**	**369,855**	**1,941,414**

Staff	2024	2025	2026	2027	2028	2029	2030	2031
Production	**3**	**19**	**35**	**52**	**69**	**95**	**197**	**267**
Li-ion electrolyte	*1*	*14*	*21*	*24*	*27*	*30*	*31*	*31*
Sodium-Salt LDES cells	*1*	*1*	*10*	*24*	*38*	*62*	*164*	*234*
R&D	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**10**
Selling, general, administrative	**1**	**3**	**5**	**9**	**13**	**19**	**44**	**50**
Total Staff	**9**	**27**	**46**	**68**	**90**	**123**	**250**	**326**

Cash flow and balance sheet projections (base)

CASHFLOWS, k€	2024	2025	2026	2027	2028	2029	2030	2031
Cashflows from operating activities (net)	**679**	**3,015**	**10,354**	**29,090**	**54,559**	**99,460**	**379,381**	**2,592,863**
Decrease in short-term receivables	247	-599	-1,264	-4,101	-5,776	-12,675	-110,447	-715,995
Decrease in inventories	0	-198	-612	-1,905	-3,371	-8,576	-93,795	-655,575
Increase in short term debt	778	-192	290	2,222	3,445	10,538	110,223	1,446,879
Cashflows from investing activities (net)	**-2,835**	**-10,058**	**-20,933**	**-26,451**	**-52,759**	**-89,232**	**-370,507**	**-2,462,019**
Cashflows from financing activities (net) (of which)	**4,800**	**17,946**	**-89**	**-210**	**-210**	**-210**	**-121**	**0**
Proceeds from grants	0	892	0	0	0	0	0	0
Proceeds from issuance of debt (+)	0	71	0	0	0	0	0	0
Repayment of debt (-)	0	-18	-89	-210	-210	-210	-121	0
Proceeds from issuance of equity	4,800	17,000	0	0	0	0	0	0
Dividends	0	0	0	0	0	0	0	0
Net increase/decrease in cash & cash equivalents	**2,644**	**10,902**	**- 10,667**	**2,429**	**1,590**	**10,018**	**8,753**	**130,845**
BALANCE SHEET, k€	2024	2025	2026	2027	2028	2029	2030	2031
Total assets (of which)	**6,723**	**25,621**	**32,041**	**56,041**	**98,762**	**181,401**	**661,358**	**4,049,651**
Cash and cash equivalents	2,713	13,616	2,949	5,378	6,968	16,986	25,738	156,583
Receivables	32	631	1,894	5,995	11,771	24,447	134,894	850,889
Property and Equipment	2,593	9,924	25,097	40,717	72,750	124,167	391,180	2,277,112
Intangible assets	1,385	1,253	1,291	1,237	1,187	1,140	1,089	1,034
Other assets								
Liabilities (of which)	**2,669**	**2,531**	**2,733**	**4,744**	**7,979**	**18,307**	**128,409**	**1,575,288**
Short-term debt	12	11	10	8	5	2	1	0
Long-term debt	858	912	823	613	403	193	71	71
Other liabilities	486	468	-60	200	200	200	200	200
Equity (of which)	**4,055**	**23,090**	**29,309**	**51,297**	**90,783**	**163,094**	**532,949**	**2,474,363**
Share capital	7,728	24,728	24,728	24,728	24,728	24,728	24,728	24,728
Retained Earnings	-3,673	-1,637	4,581	26,570	66,056	138,367	508,221	2,449,636
Other equity	0	0	0	0	0	0	0	0
Business metrics and ratios	2024	2025	2026	2027	2028	2029	2030	2031
Total debt, k€	870	923	833	621	408	195	72	71
Total Equity, k€	4,055	23,091	29,309	51,298	90,784	163,095	532,950	2,474,364
Gross Margin, %	-5737%	63%	62%	56%	52%	45%	35%	30%
EBITDA Margin, %	-259399%	43%	56%	54%	50%	44%	35%	29%
Debt-to-Equity ratio	21%	4%	3%	1%	0%	0%	<	0%
Return on Equity, %	-18%	9%	27%	75%	77%	80%	227%	364%
Return on Capital Employed, %	-25%	14%	27%	67%	69%	71%	133%	161%

“SodiScale” Project supporting Sodium-Salt

European Innovation Council

General

BroadBit Batteries has recently begun an 18.5M€ European Innovation Council (EIC) Accelerator “SodiScale” project to commercialize BroadBit’s Sodium-Salt (Na-Salt) technology.

- Project consists of a 2.5M€ grant (awarded) and a 16M€ equity investment (DD complete, pending co-investment).

Grant (granted)

Focused on completing R&D for BroadBit Batteries’ Na-Salt battery and preparing for pilot production of Na-Salt cells for first market introduction.

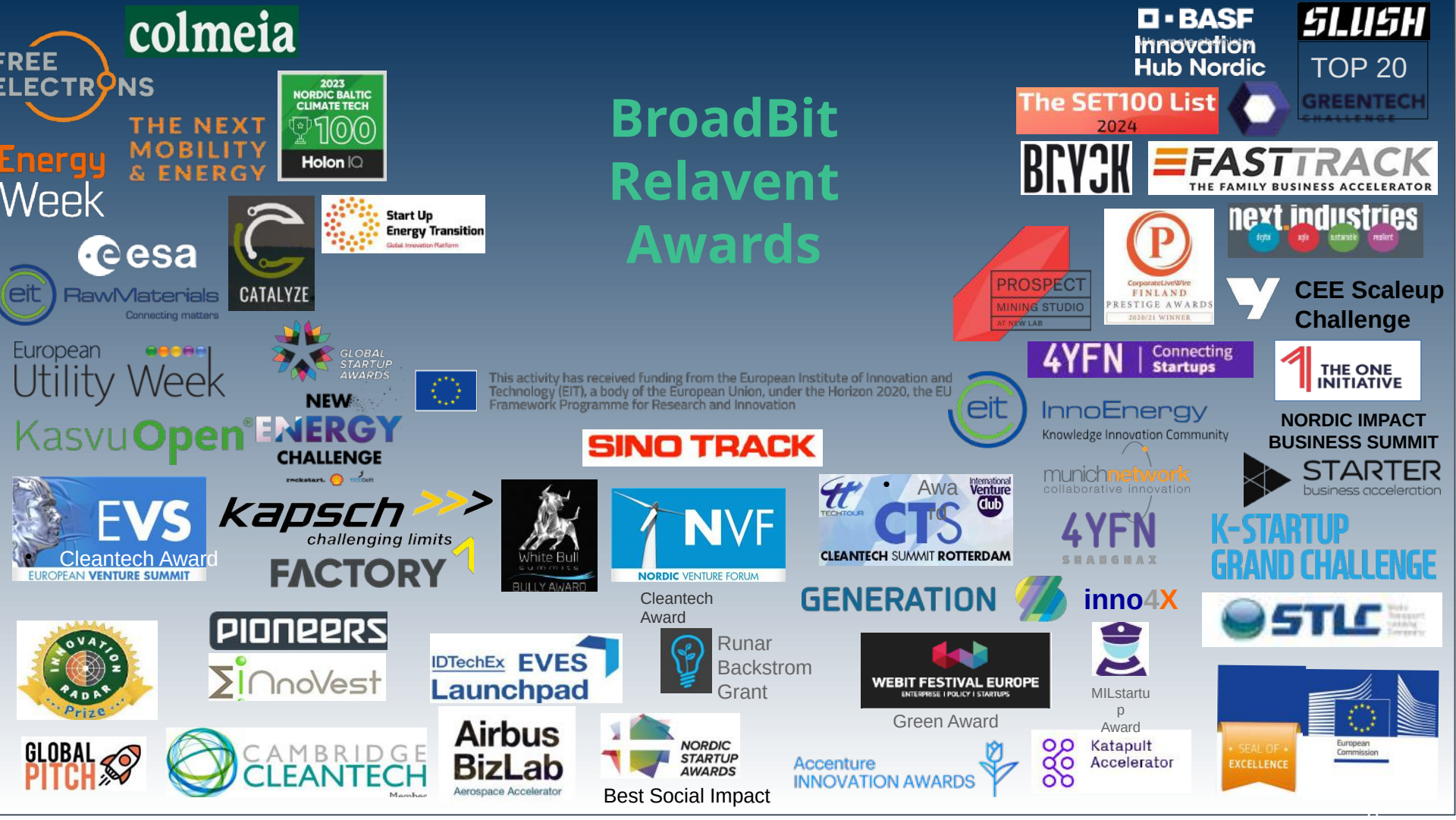
- Finalize optimization of cathode and electrolyte chemistry, optimizing cell structure
- Define component and cell production requirements for small-scale internal pilot component line

Equity (pending lead investor)

Focused on building component and cell production capability and piloting battery production for first customers

- Build cathode, electrolyte component production lines and cell assembly line
- Scale up organization and finalize first commercial deals with partners

BroadBit Relavent Awards



broadbit Batteries

Never Run Out

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