Altris

Next-gen safe and sustainable Sodium-ion batteries

Bjorn Marlid, CEO

2023

Confidential

Altris at a glance

Altris is a leading Swedish Cathode Active Material ("CAM") manufacturer, active in the Na-ion[1] battery value chain

Cathode | Others

Production of cathode, anode, electrolyte and separator materials

Battery cell manufacturing (stacking/rolling cell into different form factors)

Cell assembly into modules and successively into battery packs

Battery pack integration into end-use

Altris

Altris today

25+
employees in the organization

7+
years of research

3
leading Nordic energy investors have already invested c. USD 15m in Series A

eit InnoEnergy | molindo | northvolt

Altris development objectives

1 GWh
CAM pilot plant operations to start in Sweden in 2025

> 60 GWh
Global CAM capacity by 2030

~ USD 600m
total CAPEX to fund by 2030

Altris targets booming end-markets

+xx% CAGR until 2030 | $xbn Market size in 2030[3]

Battery Energy Storage System (« BESS »)	+26%	$100bn
Electrical Vehicles	+34%	$1,000bn
12V SLI[2] Batteries (lead-acid)	+35%	$77bn

Source: Leading management consulting agency, Altris management

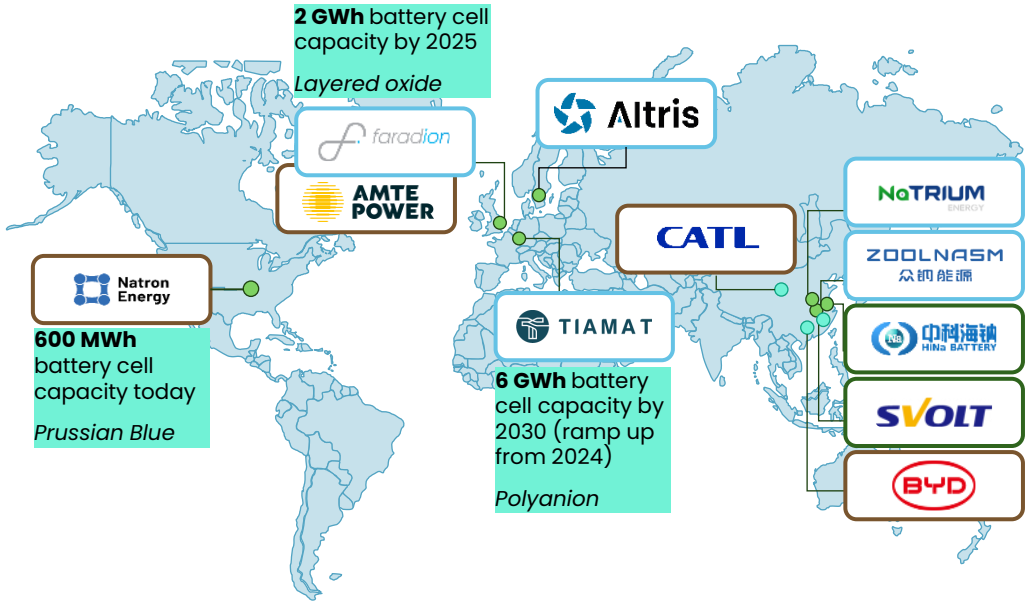
Notes: 1. Na-Ion = Sodium-Ion; 2. Starting, Lighting, Ignition Batteries; 3. Assuming USD 150/KWh average price (source: IEA Global EV Outlook 2023)

Mass production of Na-ion battery cells for commercial applications starting in 2023

2022 Q4 - NOT EXHAUSTIVE BASED ON ANNOUNCEMENTS

Western capacity planned | Na-ion Start-up | Established LiB[1] cell producer | Integrator | CAM producer | Cell producer

By 2030, **Peak Energy** says it will be producing "double digit gigawatt" quantities of battery cells for its own battery systems and for other applications
- CNBC, Oct 4th, 2023



Company	Capa-city	Na-ion related announcements
HiNa Battery	5 GWh	HiNa Battery opens the first GWh-class Na-ion battery cell production line of its **5 GWh** plant in 12/2022
Natron Energy	60MWh	Natron Energy and Arxada start world's first large-scale production of battery grade PBAs for **600 MWh** annual capacity of Na-ion batteries
Zoolnasm	2 GWh	Zoolnasm planning to start a production line for 10,000 ton CAM annually to supply **2 GWh** Na-ion batteries by **2023**
NaTRIUM	40,000 ton CAM	Natrium Energy commissioning a 10,000 ton CAM production line in 2022 planning to ramp to **40,000 ton** annually by **2023**
Altris	1 GWh	Altris wants to start production of 2,000 tons PW cathode materials annually in 2025 to supply **1 GWh** of Na-ion batteries
BYD	1 GWh	BYD announced Na-ion battery mass production to start in Q2 2023 aiming for **1 GWh** initially
CATL	24 GWh	CATL announced its first generation of 160 Wh/kg Na-ion batteries for 2023, with **24 GWh** in 2024
TIAMAT	6 GWh	Tiamat plans to enter mass production by end of 2024 ramping to **6 GWh** annually by 2030
faradion	2 GWh	Faradion enters licensing agreement with Amte power to produce its Na-ion cells with a plan to scale to **2 GWh** by 2025

1. Lithium-ion battery

Source: Company announcements, web search

The Na-Ion battery supply will not be able to meet the demand with announced capacity in Altris targeted geographies

- Na-Ion battery demand is booming and the global announced capacity is far from reaching 2030 forecasted demand
- Especially in Europe and in the USA, the key target markets of Altris, there is very limited announced Na-ion capacity

305 GWh

Na-Ion demand in the US in 2030 **vs.** announced capacity of c. **30 GWh**

325 GWh

Na-Ion demand in EU in 2030 **vs.** announced capacity of c. **30 GWh**

637 GWh

Na-Ion demand in China and India in 2030 **vs.** announced capacity of c. **140 GWh**

Announced Na-ion battery producers

PEAK ENERGY

Natron Energy

TIAMAT

faradion

HIGHSTAR 海四达

BYD

ZOOLNASM 众钠能源

CATL

鹏辉 GREAT POWER

NGK INSULATORS

VISION

INDI ENERGY

容百科技 RONBAY TECHNOLOGY

多氟多 DFD

EVE

中科海钠 HiNa BATTERY

FARASIS

SVOLT 蜂巢能源

Source: Leading management consulting agency; Expert interviews

Altris has a unique position to become a leader of Na-Ion battery technology

Well established development backed by strategic investors

7+
Years of research

8
Patents have been filed (of which 2 have been published and one has been granted)

3
leading Nordic energy investors have already invested more c. USD 15m in Series A

1 GWh/yr
CAM production by 2025 (Sandviken plant)
Pre-FEED[1] scoping ongoing with Fluor

Up to **100 MWh/yr**
B-sample production in Uppsala by 2024
A-samples currently being tested

Best-in class and competitive product

200-240 Wh/kg
energy density by 2030 –already at 160 Wh/kg vs competitors at [100-160]Wh/kg

163 mAh/g
Capacity achieved vs. ~150 mAh/g for Chinese competitors

8,000 cycles
lifetime target by 2025 (equivalent to 20+ years[2]) – already at 4,000 cycles[3]

51 USD/KWh
Battery cell cost for Na-ion (PBA) in 2030, i.e. 17% lower than for LFP (62 USD/KWh[4]). Potential to go down to 43 USD/KWh[5]

4 kg CO2/kWh
60% lower than best in class Li-ion (LFP)

Partnership driven approach

30+
offtakers committed to commence product testing

2
offtakers have already tested the product successfully (incl. Northvolt)

Access to talent
strong relationships with top academic institutions, including Uppsala University, KTH and Chalmers

4
NaCN[6] suppliers (based in the US and EU) already discussing with Altris

Source: Altris management, Leading management consulting agency

Notes: 1. Front-End Engineering Design (FEED); 2. Assuming 1 cycle per day; 3. >4,000 cycles currently proven (by extrapolation); 4. LFP battery cell cost in 2030 in EU; 5. Assuming Na-ion (PBA) energy density increasing to 240 Wh/kg; 6. NaCN (Sodium Cyanide) is the most important raw material cost item;

Altris has already established relationships and conducted testing with key offtakers

Altris' Core Partners

Category	Player	NDA[1]	MTA/CTA[2]	MOU[3]	JDA[4]	Offtake agreement	Milestones Achieved
Cell and pack manufacturer	northvolt	■	■	■	■		• **Anchor investor** in A and bridge rounds • **Joint development agreement** for ESS cell • C-level discussion on **partnership**
	Tier 1 Global Battery supplier	■	■	■	▷		• **A-sample cells** tested for 12V batteries – results fulfilling >90% of the requirements • Term sheet to be signed during December
Utility BESS	Swedish battery system developer	■	■	■	▷		• **C-level strategic discussions confirming interest** in joint development agreement • **A-sample cells** testing in Q4-23
Residential & C&I[5] BESS	Large German utility	■	■	▷			• **A-sample cells** testing in Q4-23

■ Completed ▷ In discussion

Discussions ongoing with more than 25 further potential offtakers

Source: Altris management

Notes: 1. Non-disclosure agreement; 2. Material transfer agreement/Cell transfer agreement; 3. Memorandum of understanding; 4. Joint development agreement 5. Commercial & Industrial

Altris uses the most sustainable technology in the battery space

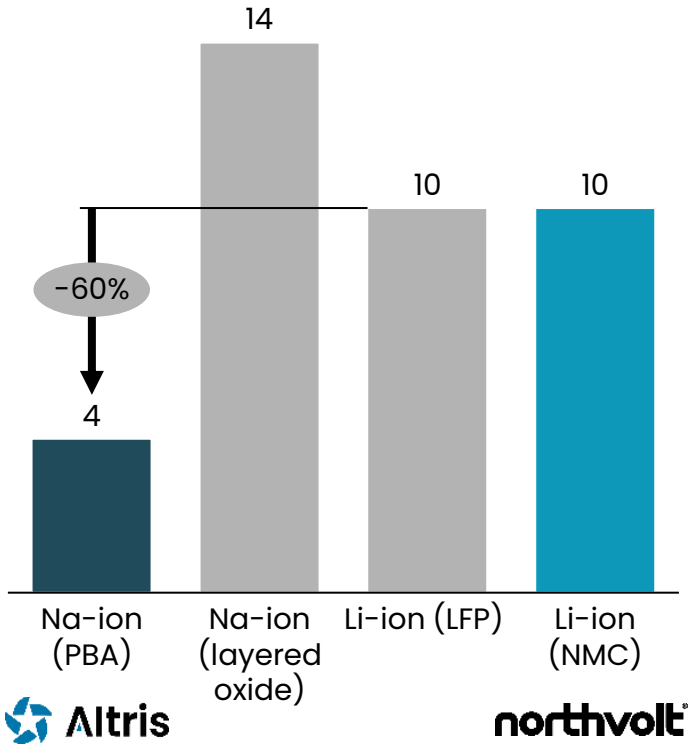
Na-Ion technology raise little sustainability issues compared to Li-Ion…

	Challenges with Li-ion	Na-ion solution
Environmental	✗ Lithium mining is associated with **soil degradation** and **biodiversity loss**	✓ **~3x lower CO_2 emissions** from extraction, compared to lithium
	✗ Lithium mining is **highly water intense,** and often mined in already arid areas	✓ Sodium is **>500x more abundant** than lithium
	✗ Cobalt causes **devastated landscapes**, water **pollution**, **loss of soil fertility**, etc.	✓ Can be **extracted from seawater** and extraction cause low stress on ecosystems
Social	✗ Lithium mining is done in regions more exposed to **labor exploitation**	✓ Sodium can be **sourced from industrial countries** with low risk of e.g. labor exploitation
	✗ Lithium mining can **threaten indigenous communities**	✓ **Germany** and the **US** are **two of the largest producers** of sodium, compared to DRC for cobalt, and China (second largest) for lithium
	✗ Cobalt has been subject to **slavery**, human **trafficking**, and **child labor**	
Governance	✗ Lithium and cobalt mining in developing economies is more **exposed to corruption** and other governance risks	✓ **Low risk** of corruption and other governance risks

Source: Leading management consulting agency

…and will have unmatched CO2 emissions vs. other technologies

Best-in-class emissions per cell type 2030, Europe, $kgCO_2/kWh$



Altris has a clear development path with targeted production of CAM in the US, the EU and SEA

	Altris today Q4-2023	**Near term future,** 2024-25	**Mid term future,** 2026-29	**Long term future,** 2030-
Altris roadmap	**CAM- and Battery cell production for testing purpose at small scale -** testing of A-sample cells and CAM with key partners Uppsala, Sweden	**~1 GWh CAM pilot factory** (2025) Tech. optimization and commercialization Sandviken, Sweden **15-100MWh** scale-up (B-sample cells) Uppsala, Sweden	**CAM 1 factory** • **5 GWh** 1st line (2027) • **2X5 GWh** upgrade (2028) • **5 GWh** upgrade (2029) Cell plant scaled to **100MWh** Uppsala, Sweden	**CAM 2 factory ~20 GWh** (2030) **CAM 3 factory ~20 GWh** (2030/31)
Geographical reach				 SEA[3]
Total capacity	CAM: 1.88 MWh[1] Cell: 60 KWh[2]	CAM: 1 GWh Cell: 15-100 MWh	CAM: >20 GWh Cell: 100 MWh	CAM: >60 GWh Cell: 100 MWh
Funding	Series A: USD 15m	**Series B1: up to USD 50m** Possibly plus EIB Venture Debt[4]	Series B2: ~ USD 150m (equity and debt)	Series C: To be further defined

Source: Altris management

Notes: 1. Plans to increase capacity to up to 4MWh/year during 2024; 2. Depending on form factor of cell; 3. South East Asia; 4. Preliminary discussions ongoing with EIB

Experienced management team backed by leading Nordic energy transition investors

Management team

Björn Mårlid
CEO

saft

20+ years of experience in leading international teams across e.g. R&D and product development

Christer Bergquist
Deputy CEO and CFO

<norrsken>

15+ years experience from finance, operations, investments and process improvements

Dr. Ronnie Mogensen
CTO & co-founder

Altris

Doctorate from Ångström Advanced Battery Centre, responsible for upscaling synthesis of electrode

Rishi Patel
CPO

northvolt

Wide experience from automotive and ESS industry covering cell- to system development

Tomas Svozil
CCO

northvolt

Has led business & product development teams in battery industries in Europe and the US

Board of Directors

Reza Younesi
Board member & co-founder

NOVO

Director of Materials Technology at NOVO Energy

Dr. William Brant
Board member & co-founder

Altris

Associate professor Uppsala University; research focus on Prussian blue analogues

Torbjörn Sternsjö
Board member

vargas

Vargas Holdings

Patrik Andreasson
Board member

northvolt

Vice President Strategy at Northvolt

Thore Sekkenes
Board member

EUROPEAN BATTERY ALLIANCE

European Battery Alliance Program Director

Morgan Sadarangani
Board member

molindo

Founder and CEO of Molindo Energy

Strategic investors

eit InnoEnergy

Portfolio of more than 200 companies, estimated to generate EUR 72.8bn in revenue and reduce the world's annual carbon footprint by 1.1G tons by 2030

molindo

After capitalization and IPO of Renewcell in 2021, Molindo made a 7.3x return on the investment

northvolt

Total investments of over USD 1.4bn in 2022, and several successful partnerships across EV and ESS markets

Source: Altris management

1

The market opportunity

- Na-ion will capture a large share of the booming battery demand
- Na-ion PBA is the most suitable technology for Altris' targeted segments
- The future large Na-ion demand is expected to be under-supplied
- Regulatory push for relocation of industry in the US and EU

2

Why Altris is highly relevant

- Unique position to become a leader of Na-ion technology
- Established relationships and testing conducted with key offtakers
- Most sustainable technology in the battery space
- Experienced management team backed by leading energy transition investors

3

An attractive investment case

- A clear development plan with targeted CAM production in the US, EU and SEA
- A well-defined timeline for the near-term future
- Attractive project economics
- Series B1 to fund the next development phase

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