

From cells to grid-scale systems.

Ultra-safe sodium-ion solutions for cold climates, high-power duty cycles and long-life energy storage.

A complete sodium-ion platform

01 Cell portfolio
Cylindrical and prismatic cells

02 12V batteries
Starter and fleet applications

03 Residential ESS
9.3 kWh long-life storage

04 C&I and BESS
Rack and container platforms

RESIDENTIAL ESS

AuroraCell RESS

9.3 kWh / 48 V / 200 Ah



ULTRA SAFE

MULTI-DECADE LIFETIME

Designed for long-term daily cycling

TECHNOLOGY FIT

Why sodium-ion, and where it wins.

Sodium-ion is not positioned as a universal replacement for LFP. It creates value where safety, low-temperature performance, high-rate power, long service life and supply-chain diversification matter most.

-40 **Cold-climate performance**

Selected cells and systems retain robust discharge capability at very low temperatures.

FAST **Fast charge / discharge**

A strong fit for UPS, 12V starter batteries, peak shaving and grid response.

LIFE **Long service life**

NCO and selected NFPP systems target demanding daily-cycle applications.

SAFE **Ultra-safe design**

Chemistry and system architecture focused on homes, C&I and critical infrastructure.

Where sodium-ion creates value

Application need	Sodium-ion value proposition
Cold-climate discharge	Robust operation where lithium-based systems can require additional thermal management
Cold charging	Available in selected NFPP and Layered Oxide cells, depending on format and system design
High-rate power	Useful for UPS, cold-start, peak shaving and fast grid response
High-temperature longevity	Especially relevant for NCO-based long-life stationary systems
Safety-critical locations	Ultra-safe system approach for residential, indoor, C&I and infrastructure projects
Supply-chain diversification	Reduced dependence on lithium-based raw-material chains

CHEMISTRY SELECTION

Chemistry selected by duty cycle.

AuroraCell selects the sodium-ion chemistry based on the real duty cycle - not only on nominal capacity.

NCO

Sodium Chrom Oxide

POSITIONING

Very high cycle life, superior safety behaviour and strong high-temperature durability.

BEST FIT

12V batteries, RESS, UPS, C&I racks and long-life stationary storage

NFPP

Polyanion

POSITIONING

Cold-charging capability, very high safety and a balanced lifetime / cost profile.

BEST FIT

Cold-climate ESS, C&I racks, outdoor storage and robust stationary systems

LO

Layered Oxide

POSITIONING

High discharge power, good energy density and selected cold-charging performance.

BEST FIT

High-power cells, starter batteries with BMS, mobility and cold-climate power

Engineered for demanding European and international requirements

AuroraCell systems are designed around compliance-ready architecture. Depending on product and configuration, available documentation may include CE, UN38.3, MSDS, IEC 62619 test reporting, UL-related approvals and UL9540A thermal-runaway data.

Technology positioning at a glance

NCO

Long-life / high-temperature stationary systems

NFPP

Cold charging / robust stationary storage

Layered Oxide

High power / selected cold-charging cells

CELL PLATFORM

Build from proven formats.

Selected cylindrical and prismatic cells for samples, validation and volume projects.



Portfolio scope

NCO, NFPP and Layered Oxide formats cover high-power, cold-climate and long-life duty cycles. Final selection depends on the required voltage window, C-rate, temperature profile and certification pathway.

-40°C

SELECTED DISCHARGE

30C

SELECTED PULSE

30k+

SELECTED CELL CYCLES

Selected technical metrics

Cell	Chem.	Ah	Vnom	Charge C	Disch. C	Tmin chg/dis	Cycles
LO-32140-10E	Layered Oxide	10	3.0	3C / 3C	10C / 20C	-20 / -40°C	>2,000
LO-32140-10P	Layered Oxide	10	3.0	5C / 5C	18C / 30C	-20 / -40°C	>2,000
NFPP-32140-7Ah	NFPP	7	3.0	1C / 1C	20C / 30C	-10 / -40°C	>3,000
3270	NCO	4	2.9	1C / 4C	16C / 30C	0 / -40°C	>20,000
60145	NFPP	28	2.9	1C / 1C	3C / 3C	0 / -40°C	>2,000
210Ah Prismatic	NCO	210	2.9	0.5C	1C	0 / -40°C	>30,000
175Ah Prismatic	NFPP	175	2.9	2C	2C	-10 / -40°C	>8,000
170Ah Prismatic	NFPP	170	2.85	1C	2C	-10 / -40°C	>12,000
70Ah Power Cell	NCO	70	2.9	1C / 2C	2C / 4C	0 / -40°C	>30,000
50Ah Prismatic	NFPP	50	2.85	2C	6C	-20 / -40°C	>6,000

Rates are continuous / pulse where applicable. Tmin indicates minimum charge / discharge temperature. Cycle figures depend on chemistry and test conditions.

SELECTION METHOD

Start with the duty cycle.

A sodium-ion project starts with power, temperature, safety, lifetime, voltage and certification profile.

01 Voltage window

Cell and system operating range

02 Power profile

Continuous and peak C-rate

03 Temperature

Charge, discharge and storage

04 Lifetime

Cycles, DoD and calendar target

05 Integration

BMS, CAN, RS485 and inverter

06 Compliance

Transport, safety and market scope

Requirement-to-technology guide

Requirement	Direction
Very high cycle life	NCO
Superior safety behaviour	NCO or NFPP
High discharge power	Layered Oxide or NCO power cells
High energy density	Layered Oxide
Cold charging	NFPP and selected Layered Oxide
Stationary long-life storage	NCO and NFPP
12V starter, passive balancing	NCO
12V starter with BMS	Layered Oxide option
C&I energy storage	NCO or NFPP rack systems
UPS / high-power backup	NCO racks; selected NFPP by profile

Duty-cycle examples

Residential PV

Daily cycling, safety

9.3 kWh NCO RESS

Data center / UPS

Power, fast recharge

Cleo NCO rack

Cold-climate telecom

Low-temperature backup

NFPP / LO / NCO

Commercial peak shaving

Cycle stability, C&I

Nexus / NFPP / NCO

Grid BESS

Thermal and EMS

2.28 MWh platform

Mobility / tools

Compact high power

Layered Oxide cells

12V SODIUM-ION

Cold-start power in a familiar format.

The Na+ Series brings sodium-ion advantages into a familiar 12V format: cold-start performance, long service life and ultra-safe design for demanding vehicle and fleet applications.

12V Sodium Ion Technology



Portfolio at a glance

4 Ah	18 Ah	27 Ah	54 Ah	81 Ah
48 Wh 120 A CCA	216 Wh 360 A CCA	324 Wh 500 A CCA	648 Wh 850 A CCA	972 Wh 1250 A CCA
112 x 69 x 106 mm	197 x 128 x 220 mm	238 x 129 x 223 mm	260 x 173 x 225 mm	330 x 172 x 240 mm

Primary platform

NCO with passive balancing concept

Alternative option

Layered Oxide with BMS for selected profiles

Cold-start use

Designed for harsh climate and fleet duty

NON-HEATED VERSION

Ultra-safe residential ESS.

Standalone sodium-ion storage engineered for safe, long-life residential energy independence.

ULTRA SAFE

SODIUM-ION SYSTEM

Designed for safe residential energy storage



FLOOR-STANDING

PASSIVE COOLING

9.3 kWh

Rated energy

30,000

Cycles at 25°C / 100% DoD

15x

Packs in parallel

IP55

Protected design

Long-term assurance

10 YEARS

Limited Product & Workmanship Warranty

Hardware repair / replacement subject to the signed terms.

20 YEARS

Limited Performance Warranty

Normal residential daily cycling within approved conditions.

25 YEARS

Design Life

Design target; not an additional warranty term.

Limited warranties. Full signed warranty terms, operating conditions, exclusions and claim requirements apply.

NON-HEATED VERSION

Technical data.

Approved pack specifications for the November production version.

Electrical & performance	Specification
Rated energy	9.3 kWh @ 100% DoD
Nominal capacity	200 Ah
Nominal voltage	48 V
Operating range	32.0 - 54.4 V
Cell configuration	16S1P
Chemistry	Sodium-ion NCO
Standard charge	50 A
Standard discharge	50 A
Maximum discharge	100 A
System resistance	<= 50 mOhm
Battery RTE	Approx. 95%

Operating & mechanical	Specification
Charging temperature	-20 to 60°C
Discharge temperature	-40 to 60°C
Cycle life	30,000 at 25°C / 100% DoD
Ingress protection	IP55
Overall dimensions	477 x 269 x 803 mm
Approx. weight	110 - 110.5 kg
Cooling	Passive / no active cooling
Parallel operation	Up to 15 packs
Pack coordination	First pack controls others
Product warranty	10 years limited
Performance warranty	20 years limited

Documentation & compliance

COMPLETE

UN38.3 | MSDS | User Manual | Product Brochure
CE Certification | IEC 62619 Test Report

PENDING

UL9540A | UL9540 | UL1973

Physical platform

803 mm

Height

477 mm

Width

269 mm

Depth

Compatible with leading 48 VDC hybrid inverter platforms

Communication and operating settings must be commissioned for the selected inverter.

Victron

Deye

Solis

Growatt

Schneider

SMA

Sungrow

SOFAR

Studer

Ingeteam

RECOMMENDED INVERTER

12 kW Three-Phase Hybrid

AuroraCell can also supply a matching sodium-ion compatible inverter.

SiC Technology

Power electronics

98.2%

Max. efficiency

30-60 V

Battery range

LONG-TERM ASSURANCE

Warranty & usable energy.

Warranty coverage and usable energy are stated separately so system designers can specify the pack correctly.

20 YEARS

Limited Performance Warranty

Normal residential daily charge-and-discharge cycling*

10 YEARS

Limited Product & Workmanship Warranty

Limited hardware warranty subject to signed terms

25 YEARS

Design Life

Design target; not an extra warranty term

WARRANTY SCOPE NOTE

*The 20-year performance warranty applies to normal residential daily cycling within the BMS-defined operating window and compatible inverter settings. It is not a fixed retained-capacity, usable-energy or AC-output guarantee. Full signed warranty terms, exclusions and claim requirements apply.

Inverter lower cut-off reference

Battery-side reference values

Inverter lower cut-off voltage	Approx. usable battery energy
32 V	9.30 kWh
34 V	9.10 kWh
36 V	8.80 kWh
38 V	8.40 kWh
40 V	8.10 kWh
42 V	7.70 kWh

SYSTEM-DESIGN NOTE

Usable-energy values are approximate. Actual delivered energy varies with temperature, current, wiring losses, BMS reserve and inverter efficiency. Use only approved lower cut-off and communication settings.

COMMERCIAL STORAGE

Nexus modular rack platform.

A modular high-voltage storage platform for commercial PV storage, backup systems, off-grid sites and technical facilities.



48.45 V / 170 Ah

RACK-MOUNTED SODIUM-ION MODULE

Configurable for residential and commercial storage, off-grid sites and PV backup.

8.2365 kWh

PER MODULE

100 - 1000 V

SYSTEM RANGE

10,000

CYCLES AT 100% DOD

Technical and application highlights

Topic	Specification / value
Nominal voltage / capacity	48.45 V / 170 Ah
Module energy	8.2365 kWh
Operating temperature	Charge: -10 to 50°C; discharge: -40 to 50°C
Protocols	RS485 / CAN; EMS connection via SNMP / Modbus possible
Efficiency	90 - 95% at 0.5C
Typical applications	Commercial storage, off-grid and PV backup, C&I rack systems

HIGH-RATE BACKUP

High-power backup. Passive by design.

Cleo combines stackable sodium-ion modules with passive battery cooling and project-specific inverter / PCS integration.



Fully passive Cleo UPS rack

- 6 kWh module with 87 V nominal voltage
- 30 kW maximum continuous discharge per module
- Rack configurations from 24 kWh / 120 kW to 60 kWh / 300 kW
- >30,000 cycles at 100% DoD; 25 years to 80% SoH
- 0 to 60°C charge; -40 to 60°C discharge
- RS485 / CANBus; UN38.3, UL1973, UL9540A

24 - 60 kWh

Energy per rack

120 - 300 kW

Continuous power per rack

>30,000

Cycles at 100% DoD

Passive

No battery-side HVAC

Project-specific integration

Runtime, inverter / PCS, redundancy, communication and certification are validated for each project profile. Passive cooling refers to the battery rack; system-level thermal requirements depend on the installation.

OUTDOOR ENERGY STORAGE

Nexus TerraShield outdoor cabinets.

Weather-stable sodium-ion platforms for commercial storage, microgrids and backup - configured by project duty cycle.

BUILT FOR EXPOSED ENVIRONMENTS

Outdoor stability. Flexible system scale.

Select the cabinet architecture by site voltage, energy requirement, cooling strategy and the level of power-conversion integration.

IP54

Outdoor enclosure

AIR / LIQUID

Cooling options

UP TO 200 kW

Integrated PCS



76.8 kWh

AIR-COOLED BATTERY CABINET

Rated voltage	480 V
Rated capacity	160 Ah
Charge / discharge	0.5P
Configuration	10P16S
Rack	1P16S
Dimensions D/W/H	1360 / 1050 / 2250 mm
System weight	<=1700 kg
Ambient range	-40 to +80°C*
Protection	IP54

115 kWh

LIQUID-COOLED BATTERY CABINET

Rated voltage	720 V
Rated capacity	160 Ah
Charge / discharge	0.5P
Configuration	5P48S
Rack	1P48S
Dimensions D/W/H	1400 / 1350 / 2100 mm
System weight	<=2350 kg
Ambient range	-40 to +80°C*
Protection	IP54

199.68 kWh

INTEGRATED LIQUID-COOLED C&I

Power conversion	200 kW
Cell technology	NFPF, 3 V / 160 Ah
Nominal DC voltage	1248 V
Configuration	1P416S
Charge / discharge	0.8P
AC output	400 V, 3P4W
Dimensions D/W/H	1650 / 1375 / 2450 mm
Approx. weight	3200 kg
Cabinet ambient	-25 to +55°C**
System efficiency	>95%***
Cycle life	>10,000 cycles
Protection	IP54

* Source comparison range; validate the operating profile during project engineering. ** Integrated cabinet derates above +45°C.

*** System efficiency excludes liquid-cooling cabinet auxiliary consumption. All configurations are subject to final technical alignment.

GRID AND UTILITY SCALE

Containerized sodium-ion storage.

For grid, commercial and utility-scale applications where safety-first architecture and system integration matter.



2.28 MWh liquid-cooled DC battery container

2.284 MWh

RATED ENERGY

0.5C

CONTINUOUS CHARGE / DISCHARGE

40 kW

LIQUID-COOLING CAPACITY

$\leq 3^{\circ}\text{C}$

PACK TEMPERATURE DELTA

ELECTRICAL & PERFORMANCE

Nominal system voltage	1,189.8 V DC
DC voltage range	624 - 1,435.2 V DC
Cell capacity / count	160 Ah / 4,992 cells
System grouping	12 x 1P416S clusters
Pack / cluster energy	23.79 / 190.36 kWh
Cluster cycle life	$\geq 8,000$ cycles to $\geq 70\%$*

ENVIRONMENTAL & MECHANICAL

Cooling method	Liquid cooling
Ingress protection	IP54 container / IP65 pack
Temperature range	Charge 0 to $+55^{\circ}\text{C}$
Discharge temperature	-20 to $+60^{\circ}\text{C}$
Container format	20 ft high-cube, non-walk-in
Dimensions / weight	6058 x 2438 x 2896 mm / ≤ 43 t

SYSTEM INTEGRATION

CAN / RS485 / TCP/IP communication, three-tier BMS, automatic gas suppression with water interface, and project-specific DC/PCS engineering.

* Reference condition: $25 \pm 3^{\circ}\text{C}$, 0.5C charge / 0.5C discharge. Performance depends on the operating profile and project conditions.

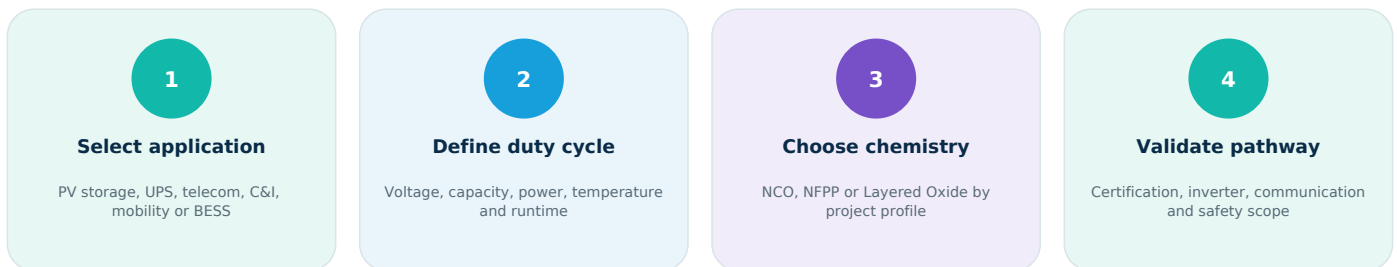
EUROPEAN PROJECT SUPPORT

One partner across the value chain.

AuroraCell supports European B2B customers with chemistry selection, sample supply, system concepts, compliance packages and project-specific configuration.

Product area	Maturity and availability
Cell portfolio	Mass-produced cells available for samples, project discussion and volume supply
12V portfolio	Portfolio-ready; project- and market-specific configurations available
9.3 kWh RESS	Mass-production platform; 10-year limited product/workmanship and 20-year limited performance warranty
Nexus / C&I racks	Pilot-ready and configurable according to customer requirements
Cleo UPS / high-power racks	Pilot-ready; project-specific configuration and certification package available
2.28 MWh BESS container	Project-specific platform with certification package and technical documentation

Start your sodium-ion project



Bring your sodium-ion project to Europe.

Cells, systems, compliance support and project-specific integration from one specialist partner.

AURORACELL LTD. | SOFIA, BULGARIA

info@aurora-cell.com | aurora-cell.com