Nidec Conversion

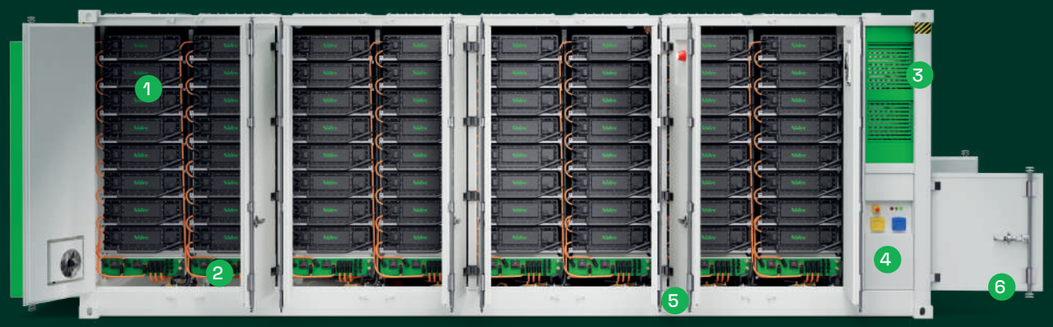
ACBOX V4

All-in-one solution

ACBOX V4 | All-in-one solution

ACBOX is an all-in-one solution based on a proprietary design comprising batteries, 4-quadrant AC/DC power conversion, efficient thermal management through an embedded liquid cooling system, and state-of-the-art safety features. ACBOX units are delivered in rugged high-cube containers, ensuring maximum robustness and compatibility with the harshest environmental conditions.

ACBOX units are complemented by an external MV/LV transformer and MV switchgear also configured and supplied by Nidec. Seamless integration with Nidec Conversion's Power and Energy Management Systems ensures maximum flexibility in meeting customer application demands and grid code requirements.



1 Energy

Tier 1, 315 Ah 0.5P LFP cells to meet demands from all applications and deliver 20+ years lifetime

2 Distributed AC/DC

SiC-based independent AC/DC converters (Rack PCS) deliver top-of-the-class RTE and maximum energy yield and system availability

3 Liquid Cooling

Embedded, custom-designed Thermal Management System (TMS) for optimal performance in all operating conditions in the most compact footprint

4 Safety Systems

- Fire detection and aerosol-based suppression
- 120-minute fire resistance of insulating material on all sides and ceiling
- NFPA 69-compliant early gas detection and extraction
- NFPA 68-compliant upward-facing deflagration venting panels

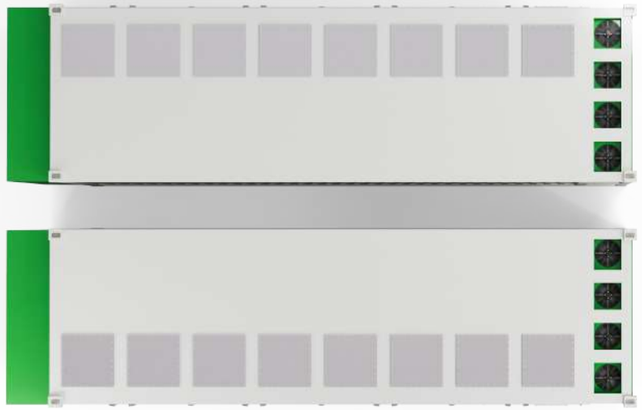
5 One-sided access

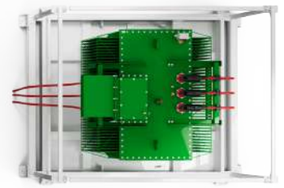
Non-walk-in design enables access to all critical equipment through doors on one side only, enabling back-to-back installation for dense site layouts

6 AC Port

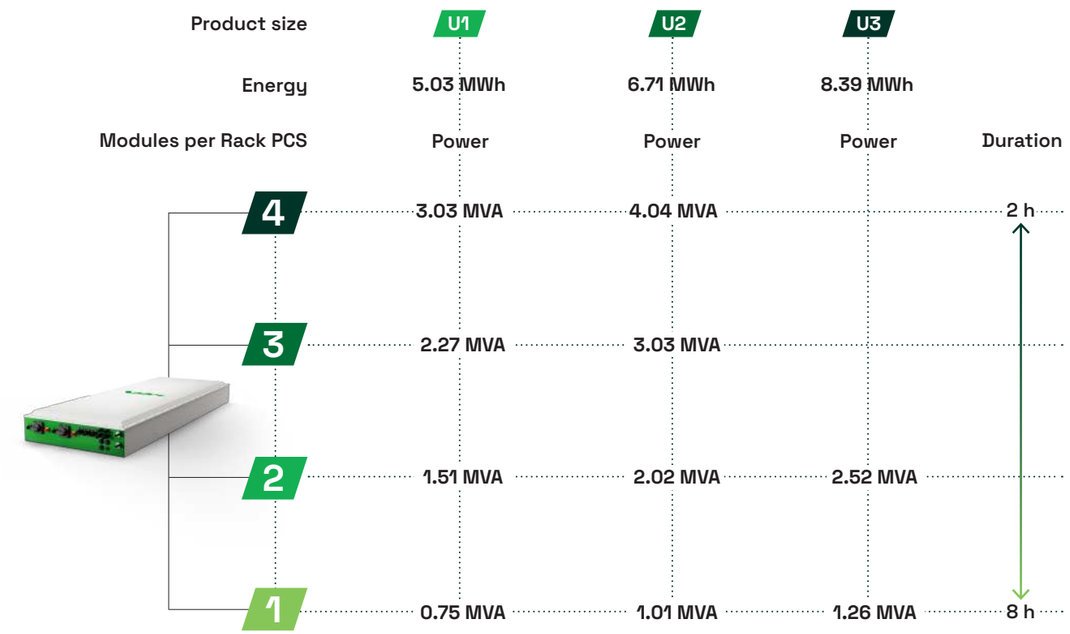
Fault-tolerant IT distribution with Insulation Monitoring Device and Type I+II SPDs

Back-to-back mirrored ACBOX + MV transformer





Configurations



Performances

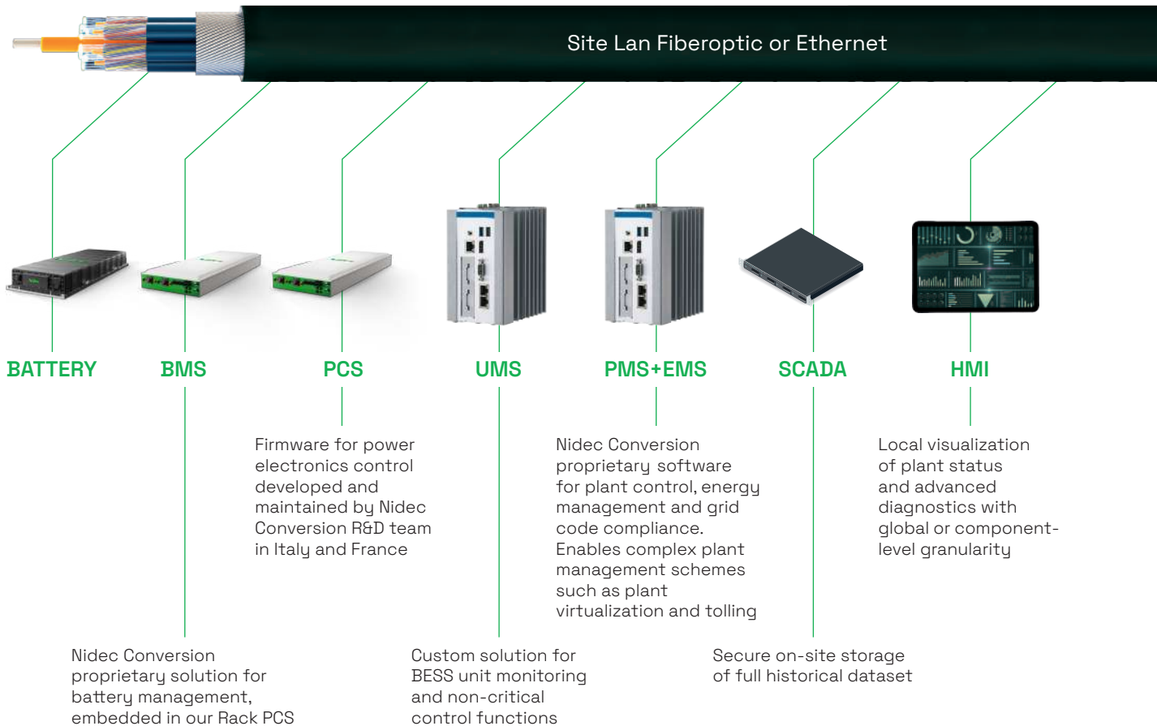
- Integrated dual cooling system
- Liquid-cooled batteries, power conversion and internal air
- Free-cooling mode for consumption optimization
- < 3 °C temperature deviation across components
- Auto-refill
- Low-noise version
- 20+ years lifetime

Safety

- Multi-layered fire detection system
- 24 h black out resilience for fire detection
- Aerosol-based fire extinguishing system
- 120-minute fire resistant insulation on all sides and ceiling
- Early gas detection and extraction
- Upward-facing deflagration venting panels venting panels
- Embedded liquid spill tank
- Dry pipe option

Assembled in EU

ACBOX assembled in Europe with PCS (Power Conversion System) Made in EU.
Vertical in-house ownership of software stack from battery cell terminals to PoC.



Ready for next generation grids

Native grid forming technology derived from our industry-leading E-STATCOM portfolio is embedded in all our BESS power conversion solutions. Its virtual inertia and xVRT dynamic grid support capabilities help strengthen grid stability by reducing voltage and frequency fluctuations and allow our products to just take over from traditional generators in case of failure or decommissioning.

Cybersecurity is built since conception in all of our products, as well as in all our company processes. Compliance with KRITIS regulation and Network and Information Security (NIS) 2 directive ensures our solutions meet the most stringent cyber-security requirements and are shielded from disruption through their lifetime.

Product Specifications

Product size	U1	U2	U3
Duration	>2 h	>2 h	>4 h
Energy | Cell type	LFP 315 Ah 0.5P	LFP 315 Ah 0.5P	LFP 315 Ah 0.5P
Energy | Cycles [1][2]	15000	15000	15000
Energy | Nameplate [1]	5.03 MWh	6.71 MWh	8.39 MWh
Energy | Racks (modules) [1]	12 (48)	16 (64)	20 (80)
Energy | Rack energy	419 kWh	419 kWh	419 kWh
Energy | Rack configuration	1P416S	1P416S	1P416S
Energy | Cooling	Liquid	Liquid	Liquid
Power | Rated @ 730 VAC [1]	3.03 MVA	4.01 MVA	2.52 MVA
Power | Rated @ 690 VAC [1]	2.86 MVA	3.82 MVA	2.39 MVA
Power | Independent DC ports [1]	12	16	20
Power | Independent AC ports	6	12	10
Power | Cooling	Liquid	Liquid	Liquid
Dimensions	22 ft HC	28 ft HC	34 ft HC
Weight	44000 kg	60000 kg	72000 kg

[1] up to [2] for reference only. Please contact Nidec Conversion for details.

Power conversion data

Architecture	Distributed SiC-based converters
Rated voltage	690, 730 V_{AC}
Rated frequency	50, 60 Hz
Power Factor	4-quadrant operation: 0 under-excited, 1, 0 over-excited
THDi	<3% @ P=25% P_{NOM}
Efficiency	99.1% peak, 98.6% @ P=100% P_{NOM}

Environmental data

Installation	Outdoor	
Ingress protection	Container: IP 55, TMS: IP XXB	Batteries: IP 67, PCS: IP 65
Corrosion resistance	Container: C5H, TMS: C4H	
Operation | Altitude [1]	1000 m	
Operation | Temperature [2]	-35 °C To 55 °C	
Operation | Relative humidity	0-100% (Condensing)	
Storage | Temperature	-40 °C To 60 °C	
Storage | Relative humidity	0-100% (Condensing)	

[1] Custom configurations available upon request [2] Detailed specifications available upon enquiry

Standards

Declaration of comformaty	CE, UKCA
Safety | Systems	IEC 62933-5-2, UL 9540
Safety | PCS	IEC 62477-1, UL 1741
Safety | Batteries	IEC 62619, IEC 63056, UL 1973, UL 9540A
EMC	IEC 61000-66-2, 61000-6-4, IEEE 1547.1
Power quality	IEC 61727, IEEE 519
Performance	IEC 61683
Cyber-security	IEC 62433
Grid code	EU | EN 50549 Finland | SJV2024 Germany | VDE-AR-N 4110, 4120, 4130, VDE FNN Guidelines for grid forming Italy | Terna Allegato A.79, CEI 0-16 Spain | NTS v2.1, Capacidades grid forming UK | G99 US | UL 1741 SB, IEEE 2800

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