

2023



BATTERY ENERGY STORAGE

FULL LIFE CYCLE
Energy Storage Services

TO BE A WORLD-CLASS ENERGY SERVICES PROVIDER

| 2GW +

Annual Capacity of PCS

| 8GWh +

Annual Capacity of BESS

ABOUT US

Shenzhen CLOU Electronics Co., Ltd. is a pioneering technology innovator in smart grid and renewable energy industry, providing energy solutions to on-grid/off-grid public utilities, thermal power plants, solar and wind power plants operators, as well as residential users. In collaboration with our partners and customers, we are helping people transition to a self-sufficient, decentralized and renewable energy supply.



MILESTONES OF CLOU ESS



1996

- Established in Shenzhen



2007

- Listed on Shenzhen Stock Exchange



2009

- Devoted to energy storage fundamental study and development of BMS



2013

- Topped the domestic off-grid energy storage market



2016

- Ranked No.1 in the domestic commercial energy storage market



2017

- Ranked No.1 in the domestic energy storage FR market



2020

- Delivered 100MWh ESS to the U.S. market



2022

- Won the largest BESS project in South America

| 27⁺

Years in the Electricity Industry

| 100⁺

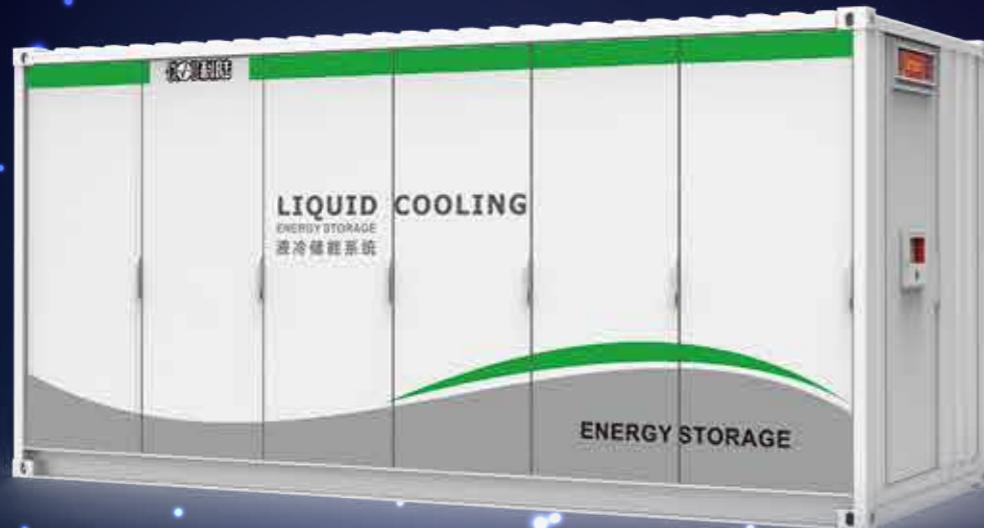
Countries and Regions with CLOU Installations & Services

Deep understanding of power system and energy storage system

SITES MAP OF CLOU ESS



UTILITY-CLOU Aqua-C



FEATURES

- ☆ Super long cycle life - 10000+
- ☆ Lower auxiliary power consumption - save 35% auxiliary consumption
- ☆ BMS active balancing technology - improve the usable capacity by 10%, shorten the commissioning duration by 40%
- ☆ Remarkable temperature control technology - $\leq 5^{\circ}\text{C}$ temperature differences inside a container
- ☆ High integrated and fully pre-installed - minimized EPC work on site, meet the requirements of rapid deployment and simple installation
- ☆ Support side by side installation of 2 containers with less installation clearance - save floor area by 50%, energy density is 111kWh/m²
- ☆ DCDC rack-level management - reduce the circulating current of battery cluster, improve the system usable energy, and realize the mixed use of old and new battery
- ☆ Flexible configuration - configurable and expandable capacity

SPECIFICATIONS

CONTAINER MODEL	20FT	4180
Nameplate Energy (kWh)	3727	4180
Max. C-rate	0.5CP	0.5CP
Cell Capacity	280Ah	314Ah
Voltage Range (V)	1186-1497.6	1186-1497.6
Max. Continuous Charge / Discharge Power (kW)	1863.5	2090
Ambient Temperature	-30-50°C (>45°C derating)	
Relative Humidity	5-95% (non condensing)	
Altitude	$\leq 3000\text{m}$	
Noise	$\leq 75\text{dB(A)}$	
Protection Rating	NEMA Type 3 / IP 55	
Anti-corrosion Level	C4 / C5 (optional)	
External Communication Interface	Ethernet / Optical fiber	
Dimension (W*D*H)	6058*2438*2896	
Design Life	20 years	
Fire Suppression System	Aerosol, Dry Water Pipe, Gas Detection, Ventilation System, Explosion Panel (Optional)	
Standards or Certificates	NFPA855 / 68 or 69 / 70 / 72 UL1973 / UL 9540A / UL9540 IEC62619 / CE / UN38.3	

UTILITY-CLOU Aero-C

20Ft.HQ container



FLEXIBLE CONFIGURATION

- ☆ Configurable and expandable capacity
- ☆ 120Ah and 280Ah energy storage cells applicable to various working conditions

FEATURES

- ☆ Super long cycle life - 8000+
- ☆ Lower auxiliary power consumption - save 20% auxiliary consumption
- ☆ BMS active balancing technology - improve the usable capacity by 10%, shorten the commissioning duration by 40%
- ☆ Remarkable temperature control technology - $\leq 8^{\circ}\text{C}$ temperature differences inside a container
- ☆ High integrated and fully pre-installed - minimized EPC work on site, meet the requirements of rapid deployment and simple installation
- ☆ Support side by side installation of 2 containers with less installation clearance - save floor area by 20%, energy density is 73kWh/m²

SPECIFICATIONS

C-RATE RANGE	0.3CP - 0.5CP	Below 0.3CP	1CP
Container Model	20Ft	20Ft	20Ft
Nameplate Energy (kWh)	2634.24	3010.56	1843.2
Max. C-rate	0.5CP	0.3CP	1CP
Cell Capacity	280Ah	280Ah	120Ah
Voltage Range (V)	1113-1491 (Full Power)	1113-1491 (Full Power)	1120-1420 (Full Power)
Max. Continuous Charge / Discharge Power	1317.12	903.168	1843.2
Operation Ambient Temperature	-30-50°C (> 45°C derating)	0-95% (non-condensing)	
Relative Humidity			
Altitude			$\leq 3000\text{m}$
Noise			$\leq 75\text{dB(A)}$
Protection Rating			NEMA Type 3R / IP54
Anti-corrosion Level			C4 / C5(optional)
External Communication Interface			Ethernet / Optical fiber
Dimension (W*D*H)			6058*2438*2896
Design Life			20 years
Weight	<35t	<35t	<27t
Fire Suppression System			Aerosol, Dry water Pipe, Gas detection, Ventilation System, Explosion Panel (optional)
Standards or Certificates			NFPA855/68 or 69/70/72 UL1973 / UL 9540A/UL9540 IEC62619 / CE / UN38.3

EXTEND CABINET

CLOU Aero-E



FEATURES

- ☆ Super long cycle life - 10000+ for Aqua-E, 8000+ for Aero-E
- ☆ Compatible for all 0.5CP or below extension demands
- ☆ High integrated and fully pre-installed - minimized EPC work on site, meet the requirements of rapid deployment and simple installation
- ☆ BMS active balancing technology
- ☆ Remarkable temperature control technology - ≤3°C for Aqua-E, ≤5°C for Aero-E
- ☆ Flexible configuration - configurable and expandable capacity

CLOU Aqua-E



SPECIFICATIONS

MODEL	CLOU Aero-E	CLOU Aqua-E
Nameplate Energy (kWh)	322kWh	418kWh
Max. Charge / Discharge Power	161kW	200kW
Output DC Voltage Range	1000-1500V	1000-1500V
Cell Capacity	280Ah	314Ah
Life cycle	≥8000 cycles@25°C,	≥10000 cycles@25°C,
Cooling Method	Air-cooling	Liquid-cooling
Operation Ambient Temperature	-30-50°C (> 45°C derating)	-30-50°C (> 45°C derating)
Relative Humidity	0-95% (non-condensing)	0-95% (non-condensing)
Altitude	≤ 3000m	≤ 3000m
Noise	≤ 75dB(A)	≤ 75dB(A)
Anti-corrosion Level	C3 / C4	C3 / C4
Protection Rating	IP54 / IP55 / NEMA Type 3R	IP54 / IP55 / NEMA Type 3
Weight	3.2t	3.5t
Dimension (W*D*H)	1470*1100*2400 mm	1300*1300*2400 mm
Fire Suppression System	Perfluoro or Aerosol, Gas Detection, Ventilation System	
External Communication Interface	Ethernet / CAN	
Standards or Certificates	NFPA855 / 68 or 69 / 70 / 72	UL1973 / UL 9540A / UL9540 IEC62619 / CE

C&I Cabinet

CLOU Aero-E pro 690



FEATURES

- ☆ All-in-one design for C&I application, with both battery system and PCS system integrated in one cabinet
- ☆ Super long cycle life - 10000+ for Aqua-E, 8000+ for Aero-E
- ☆ High integrated and fully pre-installed - minimized EPC work on site, meet the requirements of rapid deployment and simple installation
- ☆ BMS active balancing technology
- ☆ Remarkable temperature control technology - ≤3°C for Aqua-E, ≤5°C for Aero-E
- ☆ Flexible configuration - configurable and expandable capacity

CLOU Aqua-E pro 690



SPECIFICATIONS

MODEL	CLOU Aero-E pro 690	CLOU Aqua-E pro 690
Max. Charge / Discharge Power	161kW	200kW
AC Voltage Output	690V (-10% ~ +10%)	690V (-10% ~ +10%)
Frequency	50Hz/60Hz (±10%)	50Hz/60Hz (±10%)
Nameplate Energy (kWh)	322kWh	418kWh
Cell Capacity	280Ah	314Ah
Life cycle	≥ 8000 cycles @ 25°C,	≥ 10000 cycles @ 25°C,
Cooling Method	Air-cooling	Liquid-cooling
Operation Ambient Temperature	-30-50°C (> 45°C derating)	-30-50°C (> 45°C derating)
Relative Humidity	0-95% (non-condensing)	0-95% (non-condensing)
Altitude	≤ 3000m	≤ 3000m
Noise	≤ 75dB(A)	≤ 75dB(A)
Protection Rating	IP54 / IP55 / NEMA Type 3R	IP54 / IP55 / NEMA Type 3
Anti-corrosion Level	C3/C4 (Optional)	C3/C4 (Optional)
Weight	3.2t	3.5t
Dimension (W*D*H)	1470*1100*2400 mm	1300*1300*2400 mm
Fire Suppression System	Perfluoro or Aerosol, Gas Detection, Ventilation System	
External Communication Interface	Ethernet / CAN	
Standards or Certificates	NFPA855 / 68 or 69 / 70 / 72 UL1973 / UL 9540A / UL9540 IEC62619 / CE UL 1741 / UL1547	

C&I.CABINET

CLOU Aero-E pro 400



FEATURES

- ☆ All-in-one design for C&I application, with both battery system and PCS system integrated in one cabinet
- ☆ 400V AC output – compatible for direct grid-connection
- ☆ Super long cycle life - 10000+ for Aqua-E, 8000+ for Aero-E
- ☆ High integrated and fully pre-installed – minimized EPC work on site, meet the requirements of rapid deployment and simple installation
- ☆ BMS active balancing technology
- ☆ Remarkable temperature control technology - ≤3°C for Aqua-E, ≤5°C for Aero-E
- ☆ Flexible configuration – configurable and expandable capacity

CLOU Aqua-E pro 400



SPECIFICATIONS

MODEL	CLOU Aero- E Pro 400	CLOU Aqua-E pro 400
Max. Charge / Discharge Power	100kW	200kW
AC Voltage	380V (-15% ~ +15%)	380V (-15% ~ +15%)
Frequency	50Hz/60Hz (±10%)	50Hz/60Hz (±10%)
Nameplate Energy (kWh)	215kWh	418kWh
Cell Capacity	280Ah	314Ah
Life cycle	≥8000 cycles @ 25°C,	≥10000 cycles @ 25°C,
Cooling Method	Air-cooling	Liquid-cooling
Operation Ambient Temperature	-30-50°C (> 45°C derating)	-30-50°C (> 45°C derating)
Relative Humidity	0-95% (non-condensing)	0-95% (non-condensing)
Altitude	≤ 3000m	≤ 3000m
Noise	≤ 75dB(A)	≤ 75dB(A)
Protection Rating	IP54 / IP55 / NEMA Type 3R	IP54 / IP55 / NEMA Type 3
Anti-corrosion Level	C3/C4 (Optional)	C3/C4 (Optional)
Weight	2.1t	3.5t
Dimension (W*D*H)	1200*1200*2000 mm	1300*1300*2400 mm
Fire Suppression System	Perfluoro or Aerosol, Gas Detection, Ventilation System	
External Communication Interface	Ethernet/CAN	
Standards or Certificates	NFPA855 / 68 or 69 / 70 / 72 UL1973 / UL 9540A / UL9540 IEC62619 / CE UL 1741 / UL1547	

C&I- AERO-C PRO



FEATURES

- ☆ All-in-one design for C&I application, with both battery system and PCS system integrated in one container
- ☆ Satisfy all the demands of 1hour or longer system
- ☆ High integrated and fully pre-installed - minimized EPC work on site, meet the requirements of rapid deployment and simple installation
- ☆ All CLOU certified and proven core technologies - ensure perfect after-sale service
- ☆ 3-level BMS protection design ensures safety from cells, modules, racks to stacks
- ☆ High safety - multiple and comprehensive electrical protection

SPECIFICATIONS

CONTAINER MODEL	Aero-C pro
Max. Charge / Discharge Power	1536 kW
Nominal AC Voltage	630 V
Nominal Grid Frequency	50Hz/60Hz
Nameplate Energy (kWh)	1536 kWh
Cell Capacity	120 Ah
Cooling Method	Air-cooling
Operation Ambient Temperature	-30-50°C (>45°C derating)
Relative Humidity	0-95% (non-condensing)
Altitude	≤3000m
Noise	≤75dB(A)
Protection Rating	IP54/IP55 / NEMA Type 3R
Anti-corrosion Level	C3/C4 (Optional)
Weight	< 27t
Dimension (W*D*H)	6058*2438*2896 mm
Fire Suppression System	Aerosol, dry water pipe, gas detection ventilation system, explosion panel (optional)
External Communication Interface	Ethernet/CAN
Standards or Certificates	NFPA855 / 68 or 69 / 70 / 72 UL1973 / UL 9540A / UL9540 IEC62619 / CE UL 1741 / UL1547

Note: For grid-connection, a transformer is needed to change the voltage to the connection level

AQUA SERIES - RACK

1P52S



FEATURES

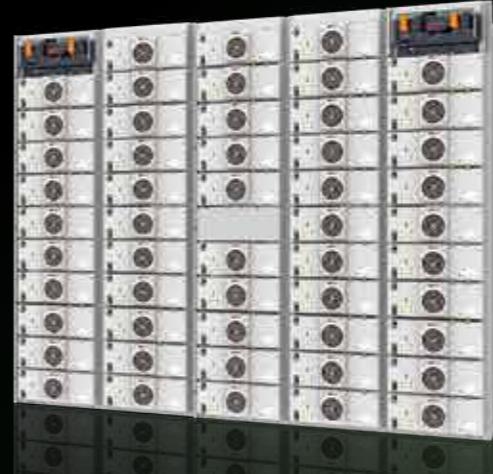
- ★ Longer battery life - 10000+
- ★ Higher energy density
- ★ Higher protection grade - IP65
- ★ Better temperature consistency, rack temperature difference - ≤ 2.8 °C
- ★ High stability cell, no fire no explosion

SPECIFICATIONS

CONFIGURATION	1P8S	1P8S
Rated Cell Capacity	280Ah	314Ah
Rated Energy	372.736kWh	417.9968kWh
Operating Voltage	1186~1497.6V	1186~1497.6V
Max. Charge / Discharge Power	0.5 CP	0.5 CP
Dimensions (W*D*H)	948*1135*2350 mm	948*1135*2350 mm
Communication Port	RS485 / CAN / Ethernet	RS485 / CAN / Ethernet

AERO SERIES - RACK

1P25S



FEATURES

- ★ Super long cycle life - 8000+
- ★ Plug & play DC sockets available
- ★ Compliance with IEC 62619, UL 1973 and UL 9540A
- ★ Simple operation and easy maintenance
- ★ High stability cell, no fire no explosion

SPECIFICATIONS

BATTERY TYPE	1P25S	1P21S
Battery Type	LFP	
Rated Cell Capacity	240 Ah	280 Ah
Rated Energy	12.288 kWh	17.92 kWh
Rated Voltage	51.2 V	64 V
Operating Voltage	44.8 V - 56.8 V	53 V - 71 V
Max. Charge / Discharge Power	12.288 kW (1.0 CP)	8.96 kW (0.5 CP)
Weight	102 kg	125 kg
Dimensions (W*D*H)	428*912*185 mm	428*912*230 mm

AQUA SERIES – Module

Aqua Battery Rack For Container



FEATURES

- ☆ Liquid cooling design, better temperature consistency
- ☆ Higher energy density
- ☆ Higher protection grade - IP65
- ☆ Lower auxiliary consumption
- ☆ Module temperature difference - $\leq 1.3^{\circ}\text{C}$
- ☆ Module-level leakage monitoring

SPECIFICATIONS

CONFIGURATION	1P52S	LFP	1P52S
Battery Type		LFP	
Rated Cell Capacity	280 Ah		314 Ah
Rated Energy	46.592 kWh		52.2496 kWh
Rated Voltage	166.4V		166.4V
Operating Voltage	130~190V		130~190V
Max. Charge / Discharge Power	23.296 kW (0.5 CP)		26.1248 kW (0.5 CP)
Dimensions (W*D*H)	1070*255*810 mm		1070*255*810 mm

AERO SERIES – Module



FEATURES

- ☆ Super long cycle life - 8000+
- ☆ Plug & play DC sockets available
- ☆ Compliance with IEC 62619, UL 1973 and UL 9540A
- ☆ Simple operation and easy maintenance
- ☆ High stability cell, no fire no explosion
- ☆ Special plastic design with high fire resistance, high insulation grade

SPECIFICATIONS

CONFIGURATION	2P16S	1P20S
Battery Type	LFP	LFP
Rated Cell Capacity	240 Ah	280 Ah
Rated Energy	12.288 kWh	17.92 kWh
Rated Voltage	51.2V	64V
Operating Voltage	44.8V - 56.8V	53V - 71V
Max. Charge / Discharge Power	12.288 kW (1.0 CP)	8.96 kW (0.5 CP)
Weight	102 kg	125 kg
Dimensions (W*D*H)	428*912*185 mm	428*912*230 mm

SMART O&MS – BYZER

Based on big data and digital twin technology, Byzer makes great breakthroughs in computing power, realizes ultra-fast safety issues warnings and accomplishes the full-life management.

Higher Detection Accuracy

Super High-precision SOX

Get the batteries health state accurately and timely

Active Balancing Technology

High efficient management and balancing

Remarkable site consistency

Higher Detection Efficiency

Automatic O & MS

Fully automatic cell-level inspection

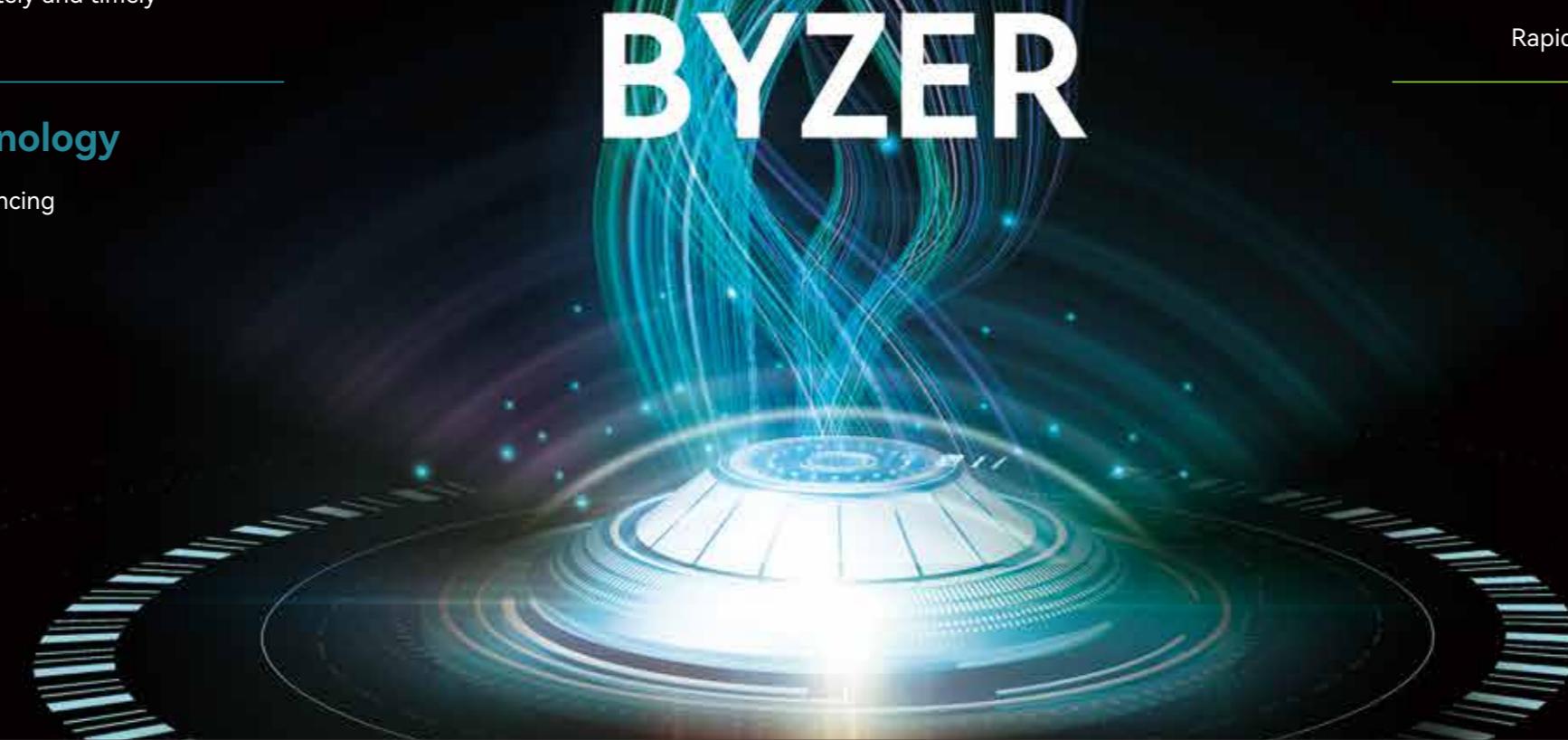
Rapid and accurate danger / short-slab cell locating

Ultra Computing Power

650,000+ cells data processing

2000+ nodes data processing

Throughput rate 50+GB/s



● Fault Detection

● Early Fault Alert

● Intelligent Decision

● Active Prevention and Control

● Safety Assessment

● SOC Assessment

● SOH Assessment

● Life Prediction

MV-PCS SKID SYSTEM



FEATURES

- ☆ Varied protection functions, enabling 100% three-phase unbalanced load operation
- ☆ Real-time active/reactive power scheduling & LVRT/HVRT function
- ☆ Advanced droop control method, up to 99% power sharing efficiency for parallel connection of voltage sources
- ☆ 20ft. Skid solution easy for transportation and installation
- ☆ Support VSG, black-start

SPECIFICATIONS

SYSTEM TYPE	NEPCSH-2400-MV	NEPCSH-2800-MV	NEPCSH-3200-MV	NEPCSH-4000-MV
Max. DC Voltage	1200 V	1500 V	1500 V	1500 V
Min. DC Voltage	700 V	800 V	915 V	1000 V
Max. DC Current	1967 A x 2	1967 A x 2	1967 A x 2	2000 A x 2
No. of DC Inputs			2 optional	
Nominal AC Power(at 45 °C)	2400 kVA	2800 kVA	3200 kVA	4000 kVA
Max. AC Current	1617 A x 2	1617 A x 2	1617 A x 2	1674 A x 2
Nominal AC Voltage	480 V	550 V	630 V	690 V
MV		34.5, 24.94, 23, 21.6, 13.8, 13.2, 12.47 kV		
Dimensions (W*H*D)			6058 *2896*2438 mm	
Weight	15000 kg	15500 kg	16000 kg	18000 kg
Operating Ambient Temperature Range			-30 to 60 °C (> 45 °C derating)	
Certificates	UL1741, UL1741SA, IEEE1547, PSCAD+PSSE Model			
Communication	Standard: RS485, CAN, Ethernet, optical fiber			
AUX Power	30/480V/MAX 8kW/10kVA (Fan 6kW, Reserved socket 1kW, Control system 1kW)			
Shut Down Aux Load	< 200w			

POWER CONVERSION SYSTEM



FEATURES

- ☆ Varied protection functions, enabling 100% three-phase unbalanced load operation
- ☆ Real-time active/reactive power scheduling & LVRT/HVRT function
- ☆ Advanced droop control method, up to 99% power sharing efficiency for parallel connection of voltage sources

SPECIFICATIONS

SYSTEM TYPE	NEPCS-2000	NEPCS-1600	NEPCS-1400	NEPCS-1200
DC Voltage Range For Nominal Power	1000 ~1500 V	915 ~1500 V	800 ~1500 V	700 ~1200 V
Max. DC Current	2000 A	1967 A	1967 A	1967 A
Max. DC Power	2040 kW	1800 kW	1574 kW	1377 kW
No. of DC Inputs	1			
Nominal AC Power (at 45 °C)	2000 kVA	1600 kVA	1400 kVA	1200 kVA
Max. AC Power At PF = 1 (at 45°C)	2000 kVA	1764 kVA	1540 kVA	1344 kVA
Max. AC Current	1674 A	1617 A	1617 A	1617 A
Nominal AC Voltage	690 V	630 V	550 V	480 V
AC Voltage Range	587-794 V	536-725 V	468-633 V	408-552 V
Overload Capability		120% for 10 seconds		
Nominal Grid Frequency		50Hz/60Hz		
Max. THD of Current		<3 % (at nominal power)		
Number Of Phases		3Ø		
Max. Efficiency / CEC Efficiency		98.8% / 98.5 %		
Dimensions (W*H*D)		1906 *2264 *800 mm		
Weight		1680kg 3696lb		
Degree Of Protection		Type 1		
Operating Ambient Temperature Range		-30 to 60 °C (> 45 °C derating) (-22 to 140 °F (> 113 °F derating))		
Noise emission		<70 dB		

POWER CONVERSION SYSTEM



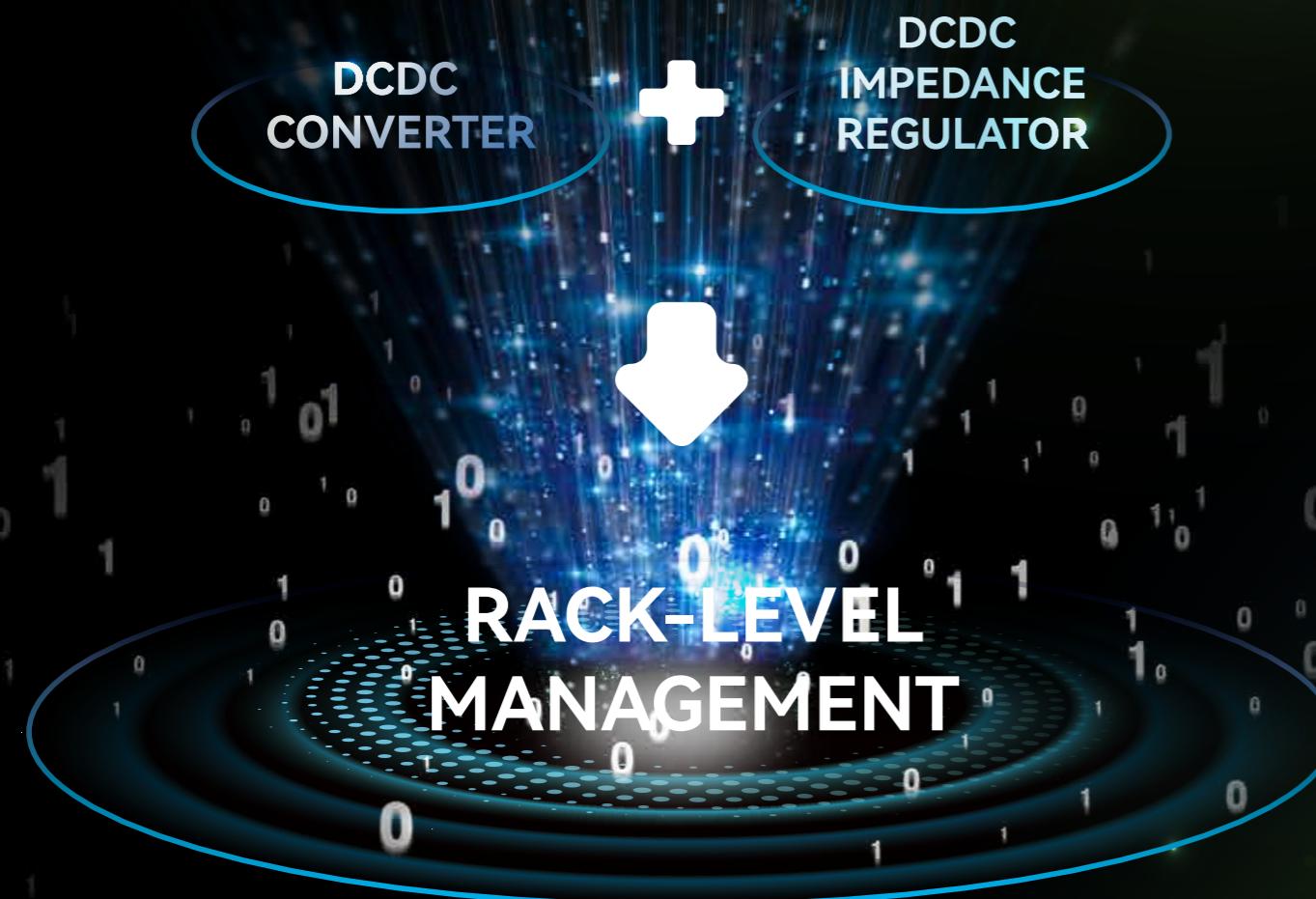
FEATURES

- ☆ Varied protection functions, enabling 100% three-phase unbalanced load operation
- ☆ Real-time active/reactive power scheduling & LVRT/HVRT function
- ☆ Degree of protection - IP65
- ☆ Advanced droop control method, up to 99% power sharing efficiency for parallel connection of voltage sources

SPECIFICATIONS

SYSTEM TYPE	NEPCSO-1725
AC side	
Number of Phases	3Ø
Nominal AC power(at 45 °C)	1725kW
Max. AC Power at PF=1(at 30 °C)	1898kVA
Nominal AC voltage	690V
Nominal grid frequency	50Hz/60Hz
Power factor at nominal power / Adjustable power factor	>0.99 / 0.99 leading - 0.99 lagging
DC side	
Max. DC power	1944kW
DC voltage range for nominal power	1000 - 1500V
General Data	
Dimensions (W*H*D)	1100mm *2400mm *1500mm 13.3" *94.5" *59"
Weight	1550kg 3410lb
Isolation	Transformer less
Degree of protection	NEMA 4X (Electronic for Inverter) / NEMA 3R(Others)
Operating ambient temperature range	-30 to 60 °C (> 45 °C derating) -22 to 140 °F(>113 °Fderating)
Allowable relative humidity range	0 - 95 % (non-condensing)
Noise emission	<70dB
Cooling method	Temperature controlled forced air cooling
Max. operating altitude	4000 m (> 2000 m derating) 13123 ft (> 6561 ft derating)
Display	Touch screen
Certification	UL1741,UL1741SA,IEEE1547
Communication	Standard: RS485, CAN, Ethernet

RACK-LEVEL MANAGEMENT BASED ON DOUBLE DCDC TECHNOLOGY



FEATURES

- ★ Flexible application
- ★ Bidirectional buck-boost design for better voltage matching
- ★ Compatible with 1500V battery system
- ★ MPPT function integrated, compatible with DC microgrid applications
- ★ Compact design and light weight for easy installation
- ★ Max efficiency 99%
- ★ Wide DC input voltage range, flexible for battery configuration
- ★ Modular design, compatible with rack level battery management

OUR SERVICES



PROFESSIONAL FIELD SERVICE

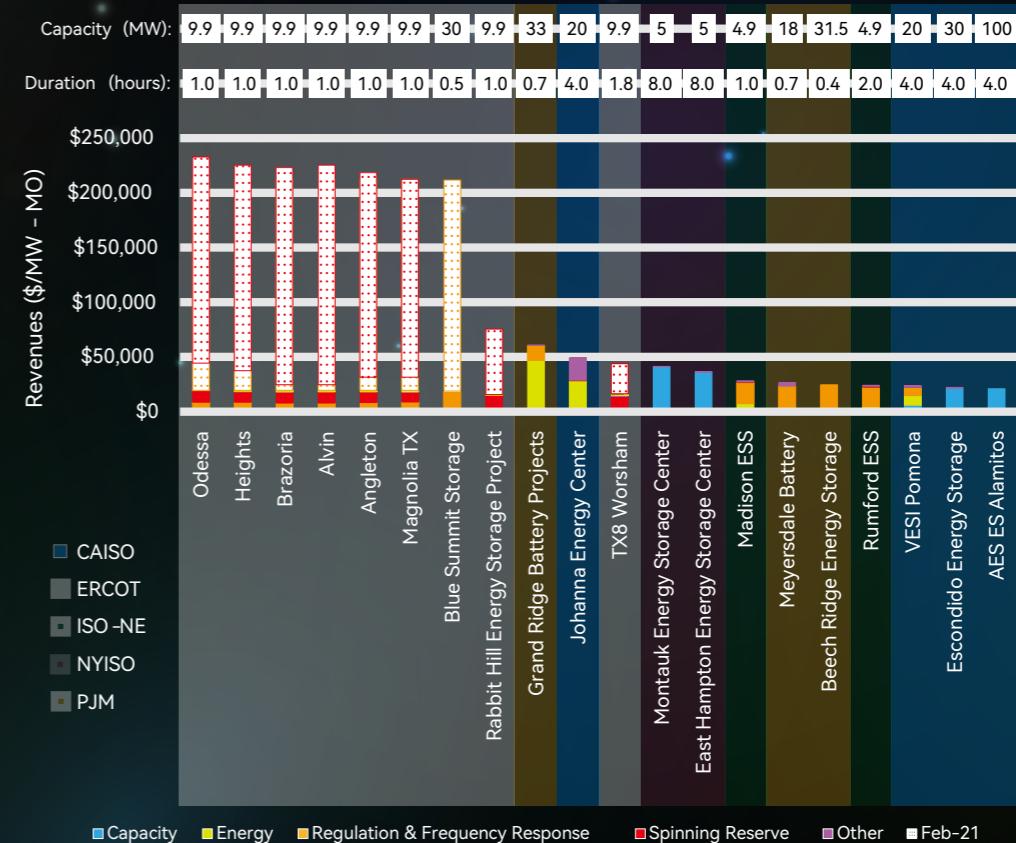


CUSTOMIZABLE CONFIGURATION



BRING YOU MAXIMUM BENEFITS

CLOU Provided the BESS for All Top 6 Sites



Top 20 US Standalone Battery Storage Project Revenues in 2021

WE ARE DEDICATED TO BRINGING YOU THE GREATEST VALUE

CLOU TYPICAL CASES

TIMELINE 2013-2022



DEEP UNDERSTANDING OF POWER SYSTEM AND ENERGY STORAGE SYSTEM

Cloudless

8+1

BRANDS WITH OUR STYLICHEMICOLOGY

Stylische Mode, Stylische Kosmetik,
Stylische Parfümerie, Stylische Accessoires
Stylische Brillen, Stylische Schuhe

Brillen

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