Shinson®
Solar Technologies

Megacube-20C2H2000K

Resilient, Reliable, and Quick Delivery Liquid Cooling Energy Station

Megacube-20C2H2000K

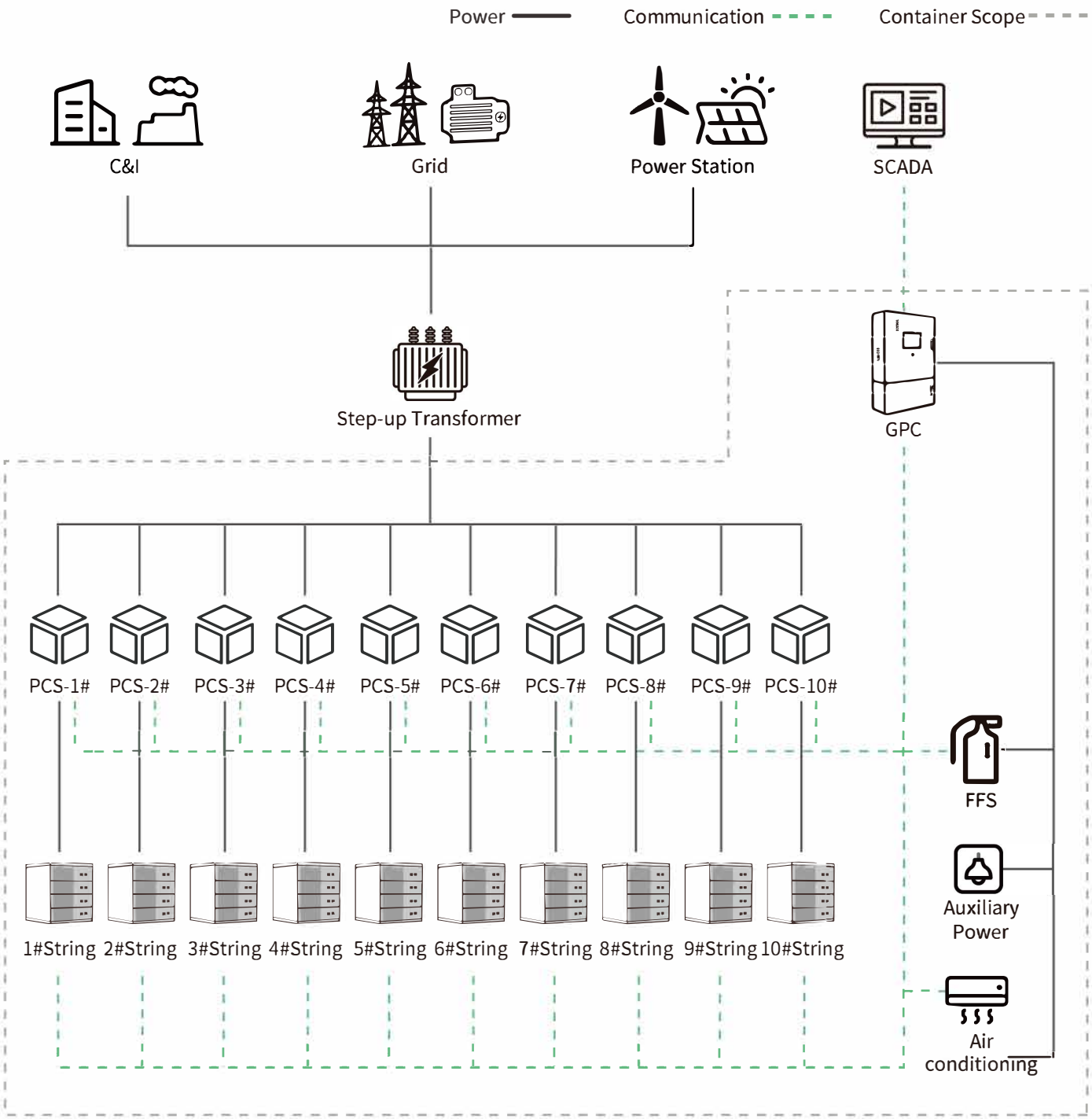
Megacube, a high-performance, all-in-one, containerized battery energy storage system developed by Cubenergy, provides C&I users with the intelligent and reliable solution to optimize energy efficiency and resilience. As the leading BESS product, Megacube is certificated by UL1973, UL9540A, UL9540, IEC62619, CE , UN38.3, complied with IEC62933, IEC62056, NFPA855, provides secure, reliable and safe power supply.

Megacube-20C2H2000K, with capacity of 4,179kWh@20ft, is ideal for mostly utility and C&I applications, such as renewable energy power plant supplement, factories, buildings, etc. The integrated and easy-to-install BESS can be easily connected and matched with the equipment, while the advanced BMS and cloud-based operation platforms bring superior interaction experience for users.

Application

- Smooth New Energy Output
- Voltage, Frequency Support, Frequency Modulation
- Peak Valley Arbitrage
- Demand Management
- Construction of Microgrid

System Topology



More Energy	All-in-one Design	Simple O&M	Safe & Reliable
Pack-level Optimization String-level Optimization	AC/DC All-in-one Design Reducing Initial Investment	No periodic balancing No experts site visit	Modular Design High Availability

Product Layout

Product Model Definition

20C2H2000K-10LS417-4LP104

Container Size	Minimum Discharge Hour	AC Power	Quantity of Battery String	Code of Battery String	Quantity of Pack per String	104kWh/Pack

Product Configuration

Product Model	Battery String Type	String Qty	Nominal Capacity	DC Voltage Range	Grid-connected Max Rated Voltage	Dimensions (WDH mm)
20C2H2000K	LS417	10	4,179kWh	1,164.8V~1,476.8V	690V	6,058x2,438x2,896mm

System Technical Specifications

Item	20C2H2000K
DC Data	
Battery chemistry	Lithium Iron Phosphate (LFP)
Cell life cycle	8,000 cycles with 70% retention @ 0.5C 25°C
Cell spec	3.2V/314Ah
String configuration	1P416S
Number of strings	10
DC rated energy capacity	4,179kWh
Rated voltage	1,331.2V
Voltage range	1,164.8V~1,476.8V
BMS communication interface	RS485, Ethernet
BMS communication protocol	Modbus RTU, Modbus TCP
AC Data	Standard Output
Rated AC Power	2,150kW
Maximum AC power	2,365kW
Rated voltage	690V
Grid voltage range	607~759V(Adjustable)
AC rate of current	1,799A
Output THDi	＜1.5(100% load)
AC PF	-1~+1
AC output	3W+PE
General Data	
Dimension w/o clearances (L*W*H)	6,058x2,438x2,896mm
Weight of the whole system	⩽36.5t
Degree of protection	IP54
Operating temperature range	-30~50°C
Relative humidity	0~95% (non-condensing)
Max working altitude	2,000m/6,562feet(non-derating)
Cooling concept of DC room	Liquid Cooling and Dehumidification system
Fire fighting system	FK-5-1-12
Communication interfaces	RS485, Ethernet
Certificates	UL9540, IEC62933, UN3536, CE MARK by TÜV Rheinland

☐ Next-Gen Control

GridPoint Controller (GPC)

an advanced one-stop BESS control and status information and management center.

Power interface	Communication
AC220V/DC24V	Modubus TCP

SPAC BMS

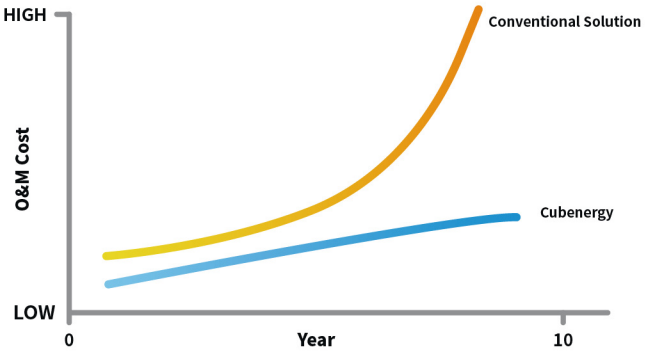
Cubenergy' s controlling evolution since 2016

SPAC BMS delivers intelligent battery management through real-time cell voltage balancing. This proprietary technology minimizes energy loss caused by cell imbalances, increasing balance efficiency and extending battery cycle life. By ensuring uniform charge/discharge distribution across all cells, SPAC BMS maximizes usable capacity while maintaining stringent safety protocols—critical for large-scale BESS applications requiring long-term reliability.

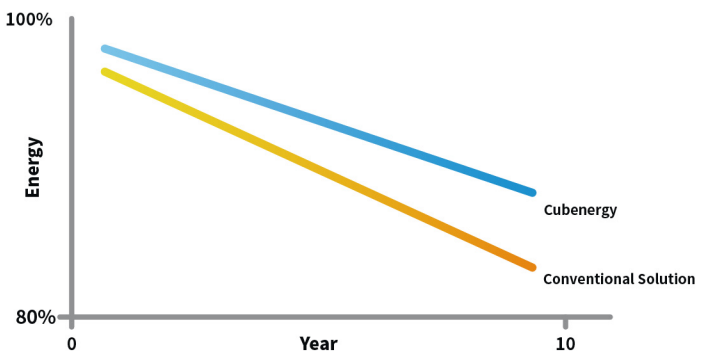
Functions

1. Monitor and protect safety of battery cell
2. Monitor and protect safety of electric system
3. Calculate and manage charging and discharging status
4. Calibrate and manage available energy
5. Optimize balance and manage cell consistency

Advantages



Maintenance Cost



Performance

☐ Grid Forming*

Cubenergy' s BESS is equipped with advanced technologies for grid voltage support and frequency regulation. It employs Virtual Synchronous Generator (VSG) control to emulate the external characteristics of synchronous generators. This delivers essential inertia, damping, and dynamic grid support, ensuring robust and stable power system operation.

Superior Grid Compliance

Maximized ROI

Enhanced Grid Resilience

Functions

- **Inertia and Damping Control**

  Inertia Emulation: The inverter simulates inertia using a virtual inertia time constant, allowing it to release or absorb energy during grid frequency or voltage changes, helping to slow down system fluctuations.

  Damping Control: A virtual damping factor is applied to suppress oscillations and improve the dynamic stability of the grid.

- **Autonomous Frequency/Voltage Regulation**

  Frequency Control: Dynamically adjusts active power based on frequency deviation (parameter kf: 0-200).

  Voltage Control: Dynamically regulates reactive power based on voltage deviation (parameter kv: 0-100).

- **Multi-Scenario Adaptability**

  Islanded Operation: Maintains voltage/frequency independently during grid outages for critical load supply.

  Weak Grid Support: Stabilizes voltage/frequency in high-renewable penetration scenarios.

  Renewables Coordination: Optimizes operation with wind/PV through power sharing.

Advantages

- **Enhanced Grid Stability**

  Compensates for the lack of inertia in renewable energy sources (PV/wind), mitigates intermittent power fluctuations from PV/wind generation, improves grid absorption capacity and suppresses frequency deviations.

- **Flexible Operation Capability**

  Supports both grid-connected and islanded modes, maintaining voltage/frequency in microgrids, and participates in grid frequency/voltage regulation in grid-tied application.

- **Multi-unit Cooperative Control**

  Enables precise power allocation among parallel inverters via virtual impedance and adaptive algorithms, solving uneven power distribution issues in traditional droop control.

- **Power Quality Optimization**

  Reduces current THD (Total Harmonic Distortion) to solve voltage imbalance issues caused by PV inverter grid integration.

*Seamless PQ Mode (Fixed Power Output) and GFM Mode (VSG Mode) Switching for Multi-Scenario Operation.

NOTES

Product dimensions and physical appearance in this brochure are nominal and are provided for the convenience of our customers. Cubenergy reserves the right to make changes from time to time, without prior notification, which may change the dimensions and physical appearance shown.

We therefore recommend you to consult with a Cubenergy sales representative before your purchase.

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