
KAC50DP/BC100DM Product Introduction



PART 01

KSTAR Company Profile

Powering Green Future

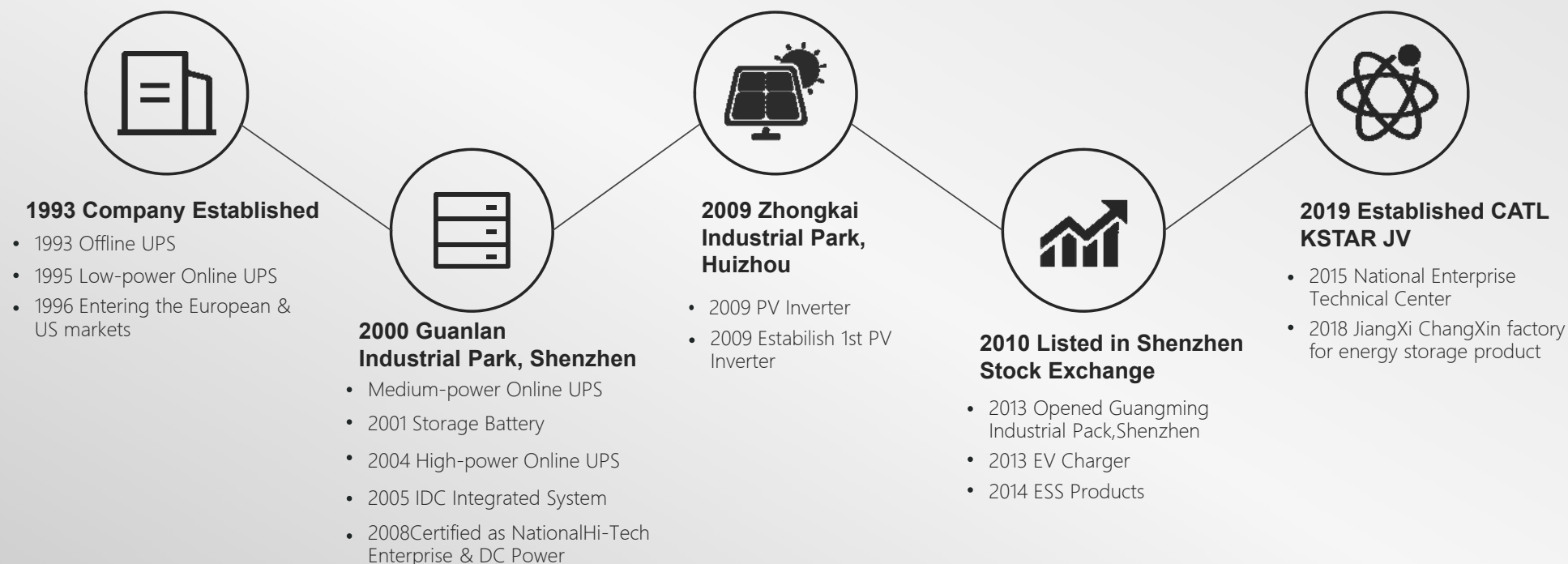
Company Profile

Founded in 1993, Shenzhen KSTAR Science & Technology Co., Ltd is a pioneer of UPS industry and a total solution provider for Data Center Critical Infrastructure & PV Inverter Systems worldwide.

KSTAR has been providing high-quality products to over 90 countries and regions worldwide, leading the industrial development with innovation.

With a floor area of 150,000 square meters and a building area of 167,000 square meters, KSTAR R&D and manufacturing base is a world-leading base in terms of scale and manufacturing capabilities.

KSTAR Development history of the company



Development Milestone Global Office and Service center



- 18 Overseas Branch
- 40 Overseas Service Engineers
- Global Service Network
- 24/7 Response and Support

PART 02
C&I Energy Storage Solution
Powering Green Future

KSTAR 50KW/100kWh outdoor all-in-one ESS Solution



Highlights:

Safe&Reliable

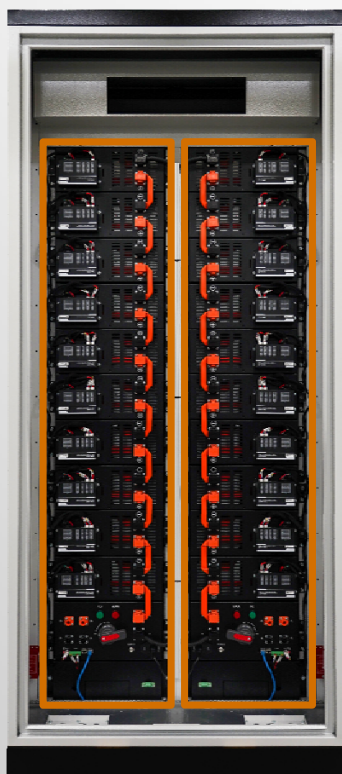
- **CATL LFP** battery cell
- Double fire suppression system design
- 1+1 redundancy design

Simple&User-friendly

- Pre-installed in factory for easy installation on site
- **Integrated EMS**, suitable for various applications
- Effortless operation, cloud control

Solution Description

Built-in EMS with could control interface + fitted with BMS of 1+1 redundancy design



➤ **1+1** redundancy design

➤ Better cooperation between
BMS and EMS

➤ Quicker response with less
communication distance

➤ Attentive protection
function

User friendly EMS design
with multiple work mode

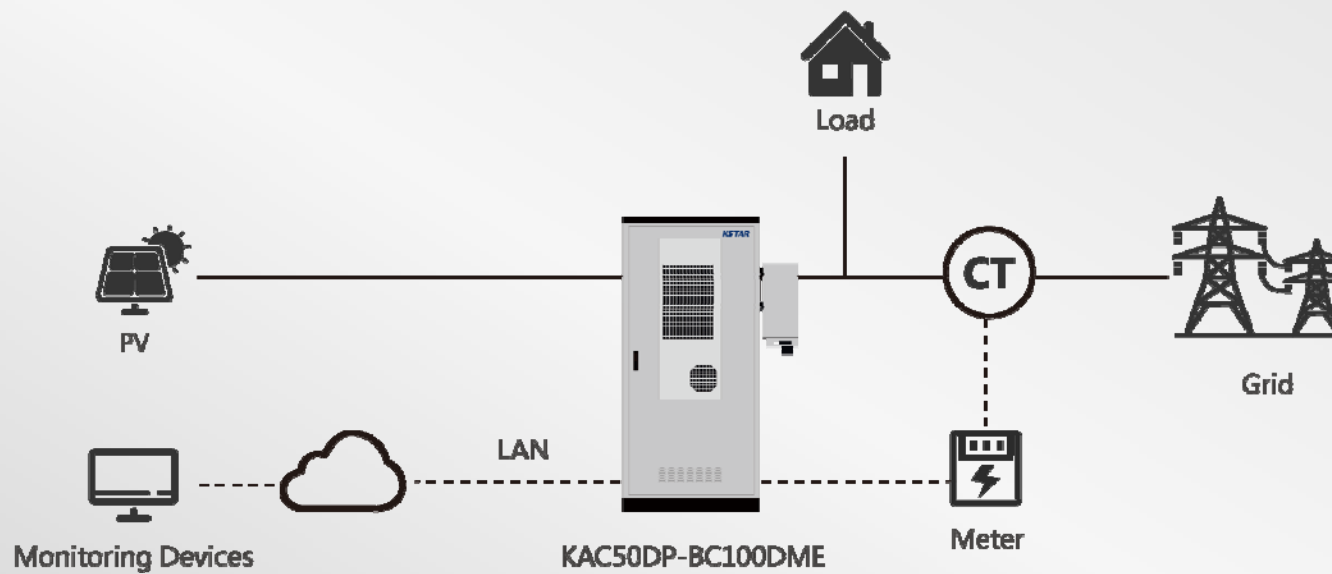
7 inches EMS screen with
simple operation

More reliable communication with
less risks of external affects

Provide third party communication interface
for upper level monitoring and control

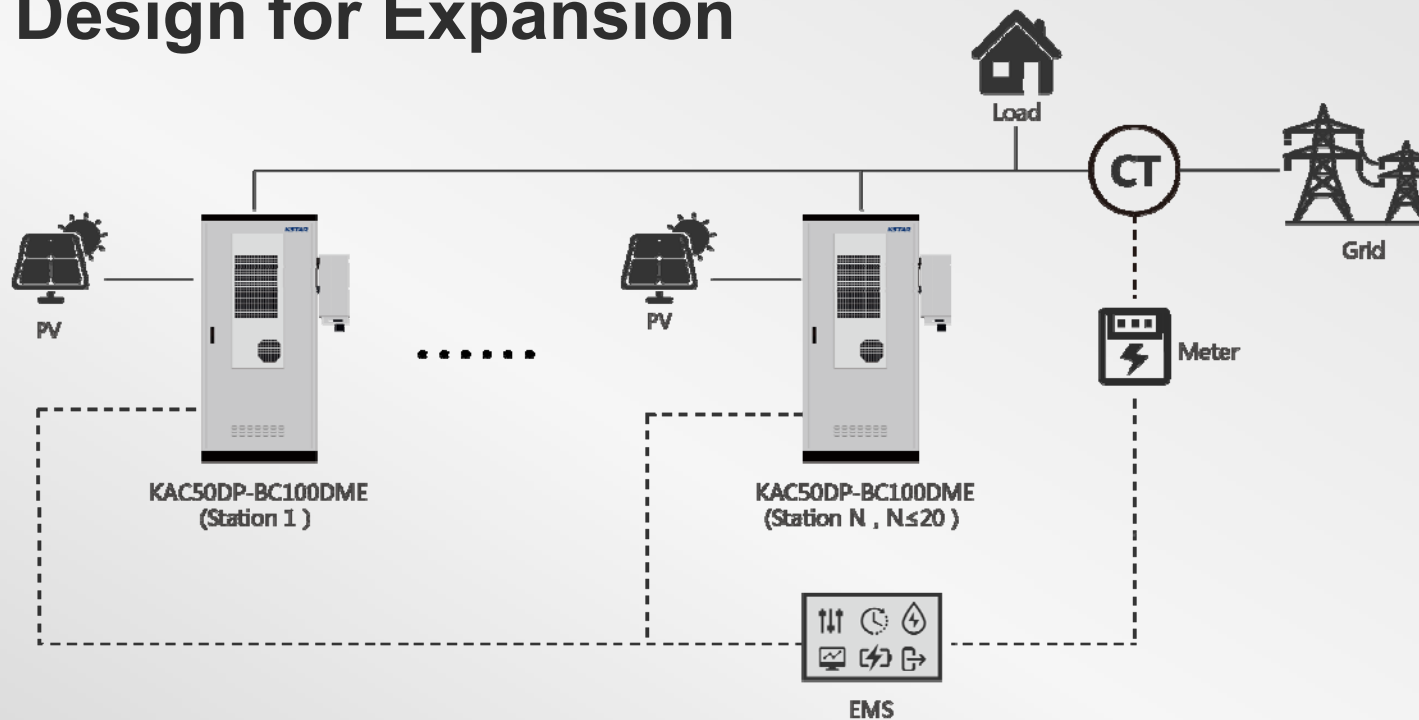


System Application



The system can be expanded to **50KW/200KWH**

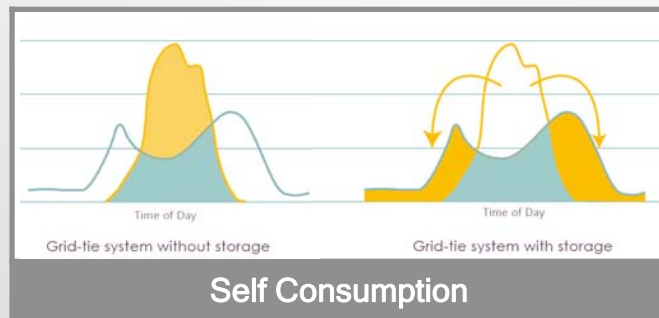
Modular Design for Expansion



Max 20 in parallel, 1MW/2MWH(4MWH)

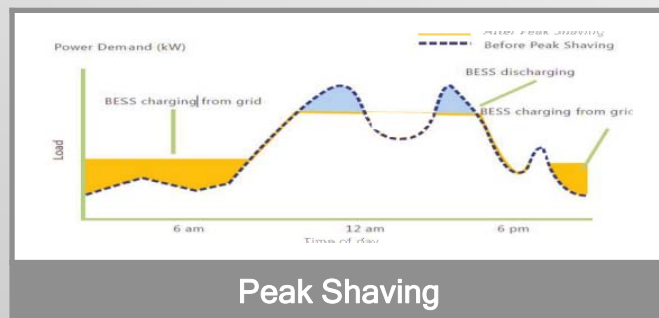
Flexible work mode

ToU, Peak shaving, Self-consumption enabled by built-in local controller



Strategy: PV generation meets the demand of the loads in priority, and the excessive PV power will be stored for later use.

Purpose: Cut electricity bill by minimizing the energy consumption from the grid.

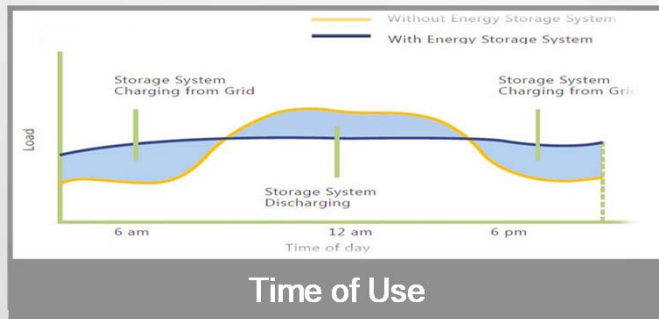


Strategy: When the power extracted from the grid falls outside the peak/valley range, the battery start to discharge/charge.

Purpose: Avoid extra charge caused by extreme high demand and make good use of power capacity contracted with DNO/DSO.

Flexible work mode

ToU, Peak shaving, Self-consumption enabled by built-in local controller



Strategy: Preset a time schedule for the system to charge and discharge with selectable time range and power ratings

Purpose: Make good use of electricity arbitrage to minimize the unit electricity price

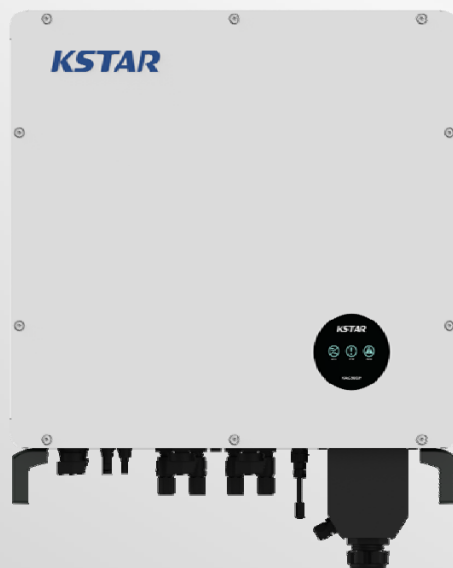
BACKUP

Battery Priority

Strategy: PV generation and Grid meet the demand of battery charging; Battery discharges only after grid failure.

Purpose: Ensure the longer backup operation time and reliable power source.

KSTAR 50kW modular hybrid power converter



Product Specifications	KAC50DP
PV Side	
Max. Input Voltage	1000V
MPPT Voltage Range	350V~800V
Max. Current per MPPT	36A
Number of MPPT	3
Number of Inputs Per MPPT	2
Battery Side	
Max. Input Voltage	750V
Min. Input Voltage	350V
DC Voltage at Nominal Operation	500V~750V
Max. DC Current	50A*2
Max. DC Input Power	55kW
Number of DC Inputs	2
AC Side(On Grid)	
Nominal AC Output Power	50kW
Max. AC Output Power	55kVA
Max. AC Current	80A
Nominal AC Voltage	400V
AC Voltage Range	340V~440V
Nominal Grid Frequency/Frequency Range	50/60Hz±5Hz
THDv	<3%(100% Load)
Adjustable PF Range	-1(Lagging)~1(Leading)
AC Side(Off Grid)	
Nominal AC Voltage	230/400V±3%; 3L+N+PE
THDv	<3%(Linear Load)
Nominal Grid Frequency/Frequency Range	50/60Hz
Nominal AC Output Power	50kW
Max. AC Output Power	55kVA
General Parameters	
Dimensions(W*H*D)	650*715*325mm
Weight	62KG
Topology	Transformerless
IP Protection	IP65
Operation Temperature Range	-25~60°C(>45°C Derating)
Operation Humidity Range	0~100%(No Condensing)
Cooling Method	Intelligent Air Cooling
Max. Operation Altitude	4000m(>3000m Derating)
Communication Port	RS485/CAN
Standards	IEC 62477 , IEC61000 , CE , GB/T

KSTAR 100kWh outdoor battery cabinet



Technical Parameters		BC100DME
Battery Type		LFP
Battery Module Capacity		5.12kWh
Number of Modules		10*2
Total Battery Capacity		102.4kWh
Nominal Voltage		512V
Operating Voltage Range		448V~565V
Charge/Discharge Rate		Max. 0.5C
DoD		90%
General Parameters		BC100DME
Dimensions(WxDxH)		1100 x 1100 x2380 mm
Weight		<1.5T
Installation Site		Outdoor
IP Protection		IP54
Anti Corrosion Level		C4
Operation Humidity		5%~95% (No Condensing)
Operation Temperature		-30°C~ +50°C
Max. Operation Altitude		4000m (>3000m Derating)
Communication Port		Ethernet;CAN
Communication Protocol		CAN;MODBUS TCP/IP
Cooling Method		Air Conditioner
Standards		IEC62619-2017;UN38.3;IEC61000-6-2/4

PART 03
C&I ESS Highlights
Powering Green Future

Technical feature overview

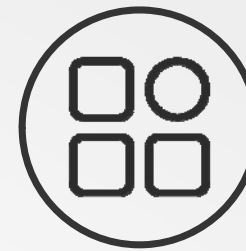
KAC50DP/BC100DM



Safety



User friendly



Multifunctional

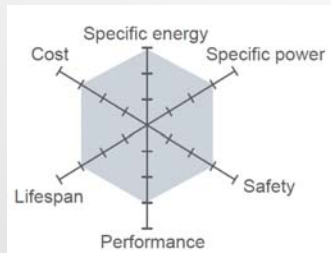


Safety 01

Powering Green Future

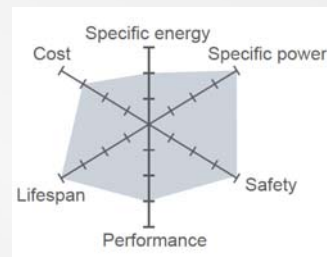
Safety , Reliability, Long life of CATL Cell

Safety VS



NCM

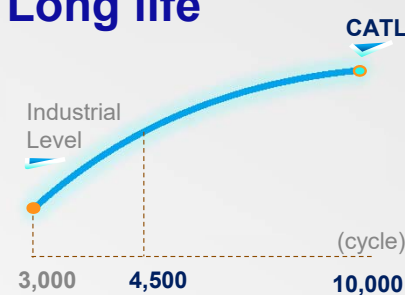
- Unstable crystal structure
- Thermal runaway temp.: 200°C



LFP

- Stable bond
- Thermal runaway temp.: 800°C
- Thermal runaway low temperature rise, no spark

Long life

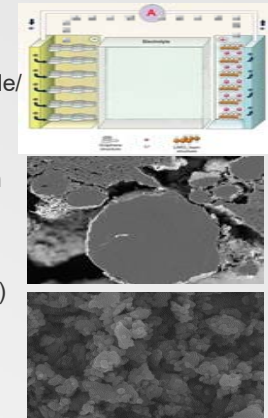


- CATL LFP battery with the cell life up to 10000 times, leads the battery industry.

Optimizing anode/cathode/ electrolyte

Graphite With Self-healing Structure (Volume ED≥350Wh/L)

Martia Coating



Reliability



Metal Prismatic
Lifespan: 20 years



Polymer Pouch
Lifespan: 5 years



Cylindrical
Lifespan: 5 years

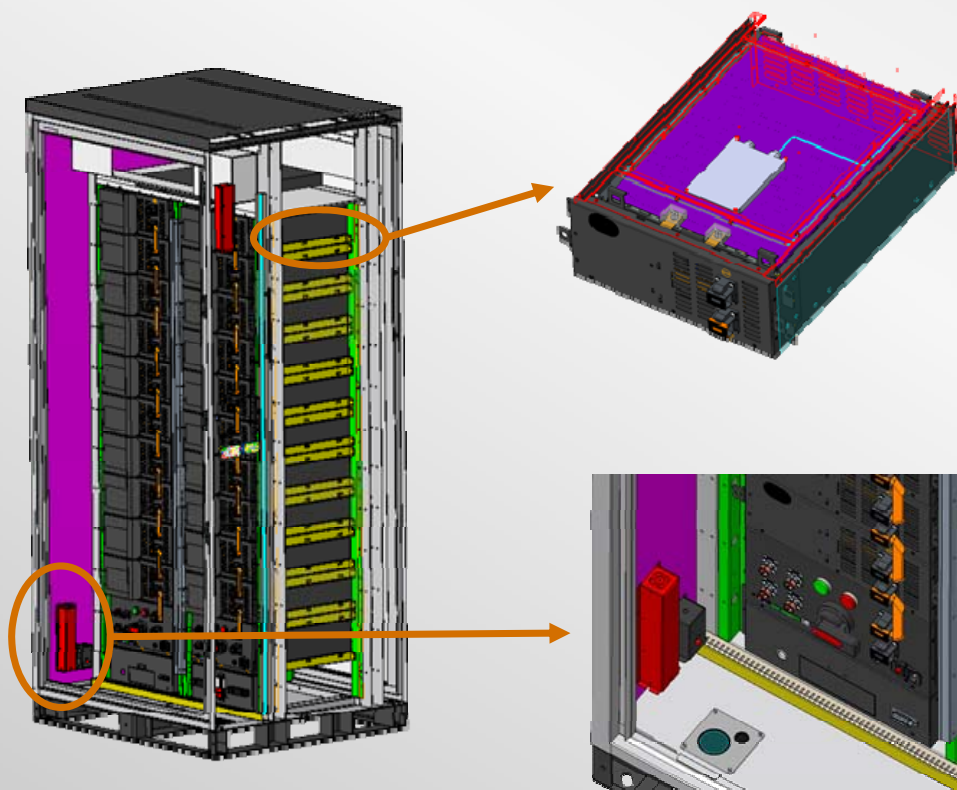


Plastic Prismatic
Lifespan: 5 years

- Prismatic aluminum shell: no deformation, no leakage, directional gas release
- Aluminum-plastic shell: deformation, leakage, poor sealing, Uncontrollable vent hole
- Only the Metal Square cells with aluminum casing in all of its battery packs for long mechanical life-span and safety.

Double Fire extinguishing system

Automatic and fast response fire extinguishing system on both module and cabinet level



Module level

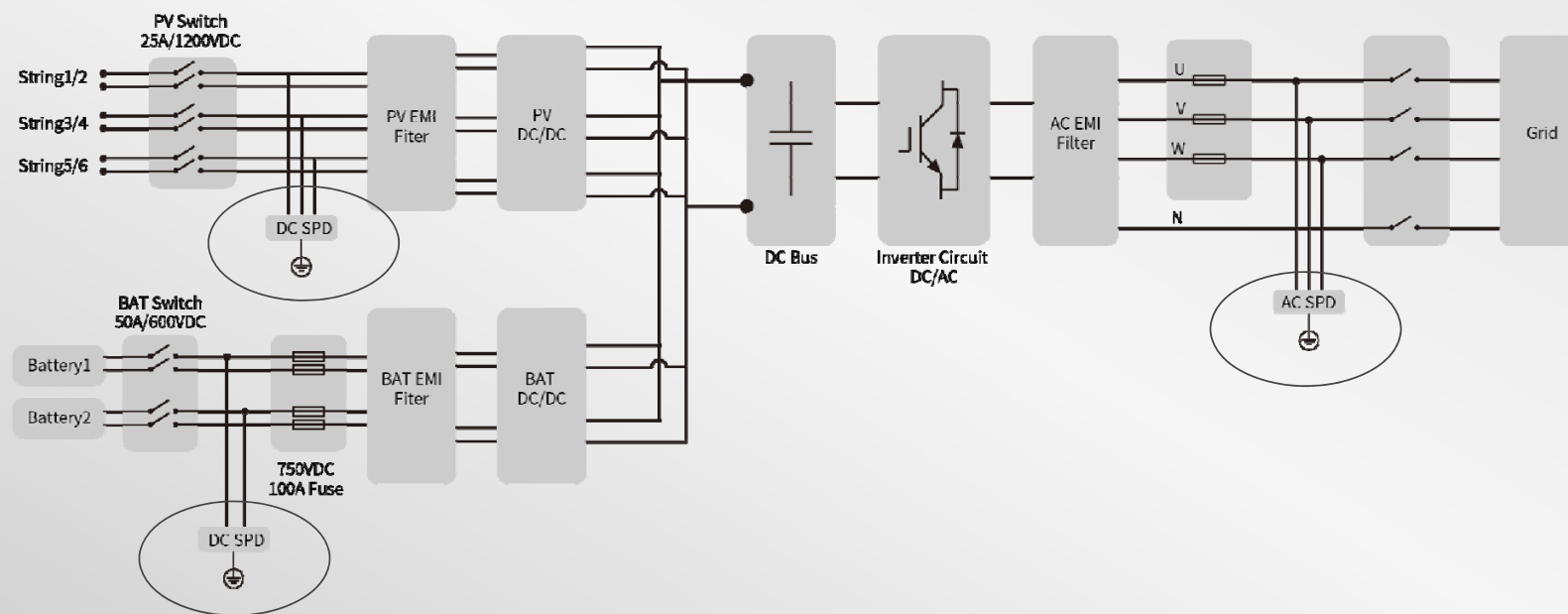
- ◆ Highly efficient and environment-friendly fire suppressing Perfluoro(2-methyl-3-pentanone)(NOVEC 1230) are placed in each module and utilized with automatic and quick response with abnormal temperature captured by the built-in sensor.
- ◆ The effect can be brought down to the minimal level with this inside out fire extinguishing method.

Cabinet level

- ◆ Dual aerosols fire suppression design at the corner of the cabinet level can protect the cabinet of 3.3 m³ from electrical fire and re-ignition hazards.

DC&AC SPD II

Higher level of protection from surging currents and lightning strikes on both PV and battery side
Independent SPD inside the Battery cabinet as well to protect the entire system

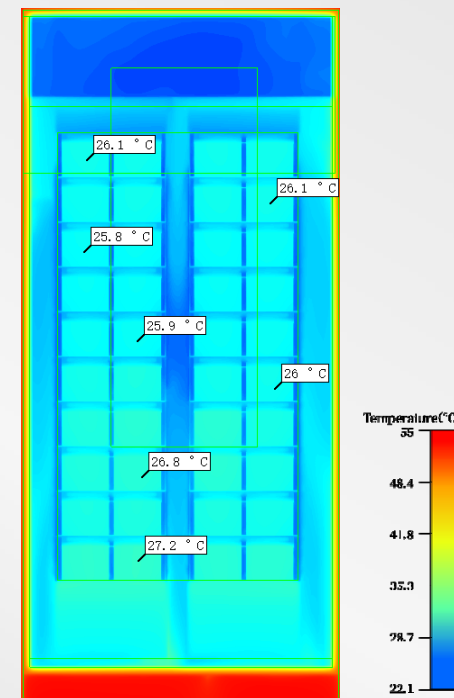


Built-in HVAC system

High efficiency temperature and humidity management system for batteries' better performance

HVAC:

- ◆ Smart cooling with Tier 1 industrial air conditioning system,
- ◆ Compact design with wall mounted AC
- ◆ Optimum wind path to ensure high cooling efficiency and low temperature difference(max. **<5 °C**)
- ◆ Enclosed cabinet for better HVAC performance



Ambient Temperature: 55 degree Celsius



User friendly **02**

Powering Green Future

Easy installation

Pre-assembled in the factory

Factory



Transportation



Installation



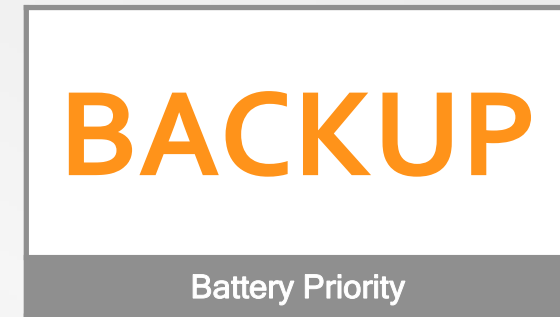
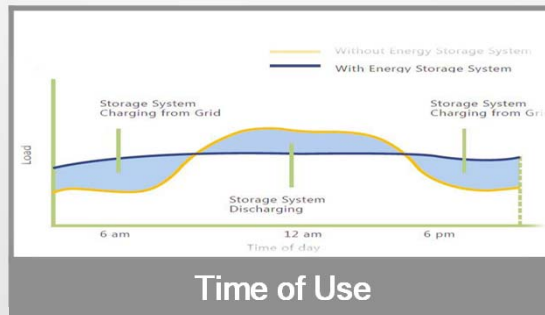
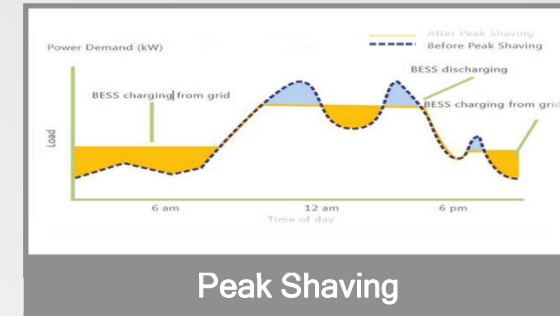
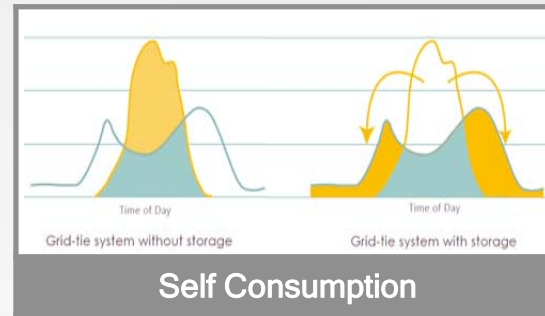
Simple operation

Built-in EMS



7 inches EMS screen with
simple operation

User friendly EMS design
with multiple work mode



Other:
Zero export and demand control

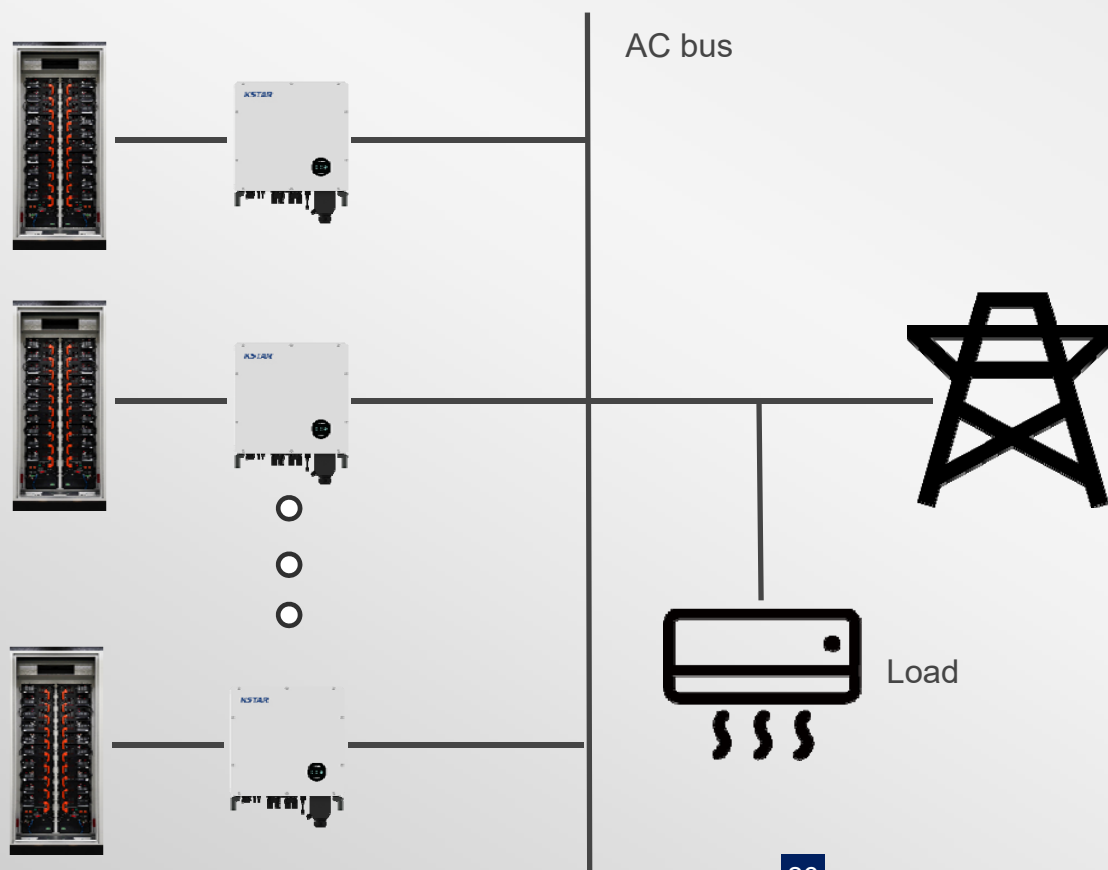


Multifunctional **03**

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String ESS

Enable future expansion and provide higher power supply reliability and system redundancy



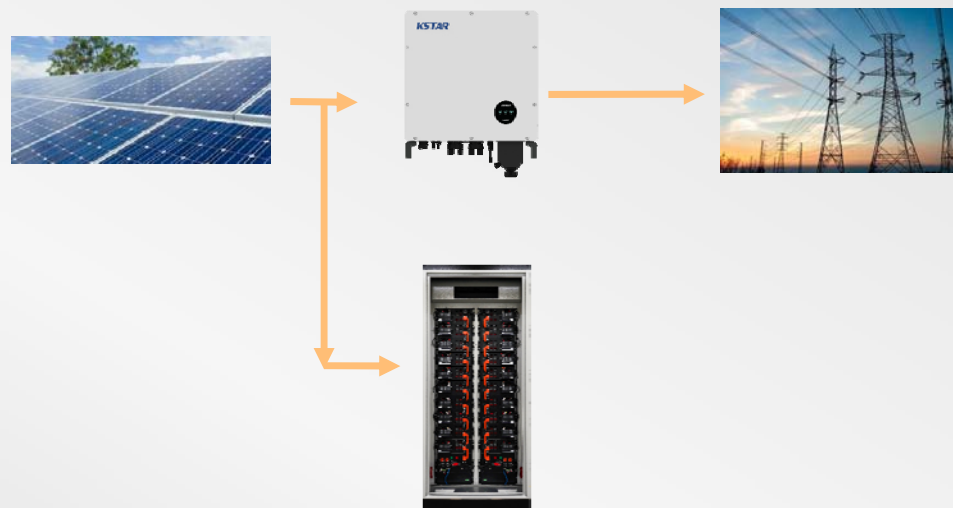
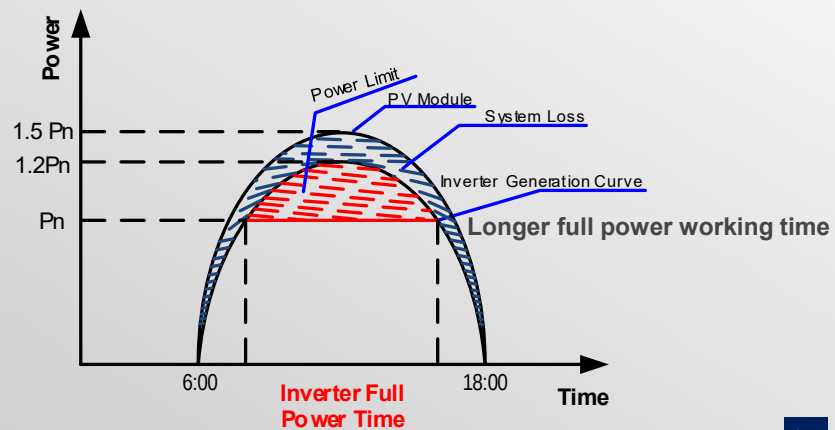
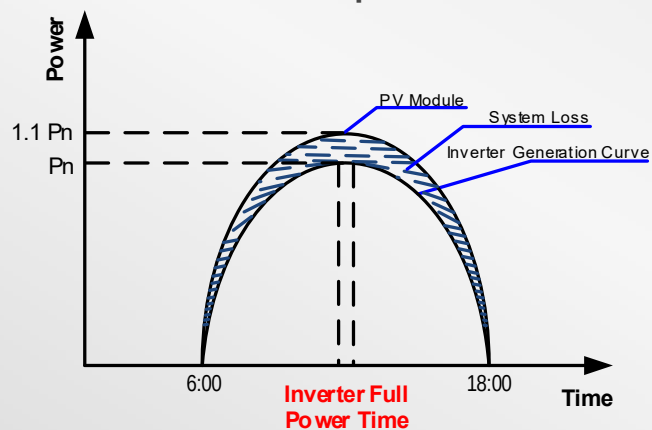
Better compatibility for future expansion

Better performance on rack level battery inconsistency

Less impact from maintenance

MPPT for PV+ESS integration

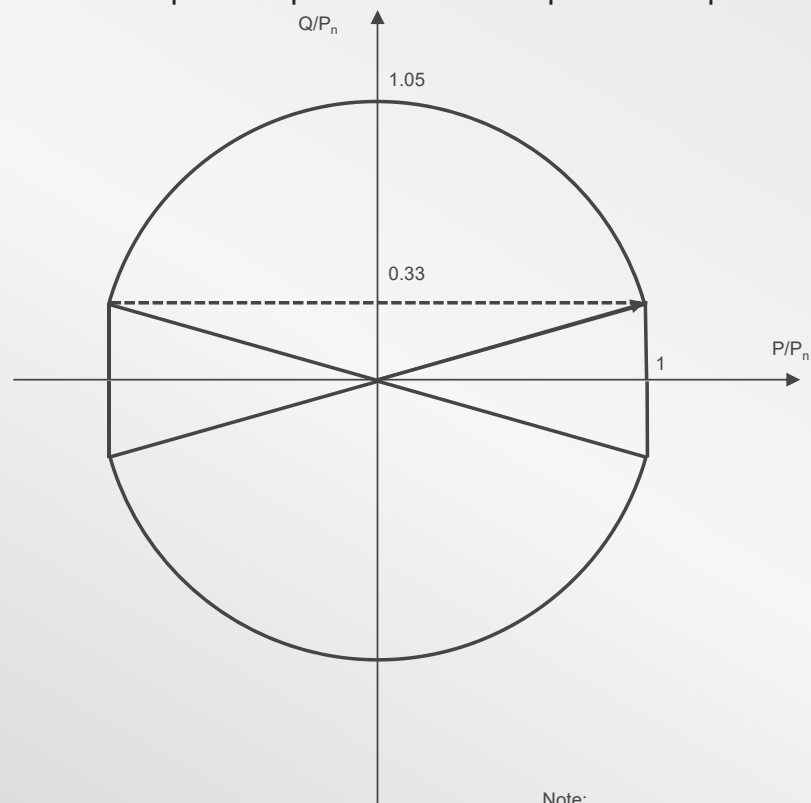
KAC50DP- 3 MPPTs with two inputs for each MPPT and DC/AC ratio up to 1.5



Advantage of PV+ESS with higher DC/AC ratio:
Excessive PV power (power larger than the nominal power of the inverter) can be stored in the battery.

Economic – Support SVG Function 4 Quadrant

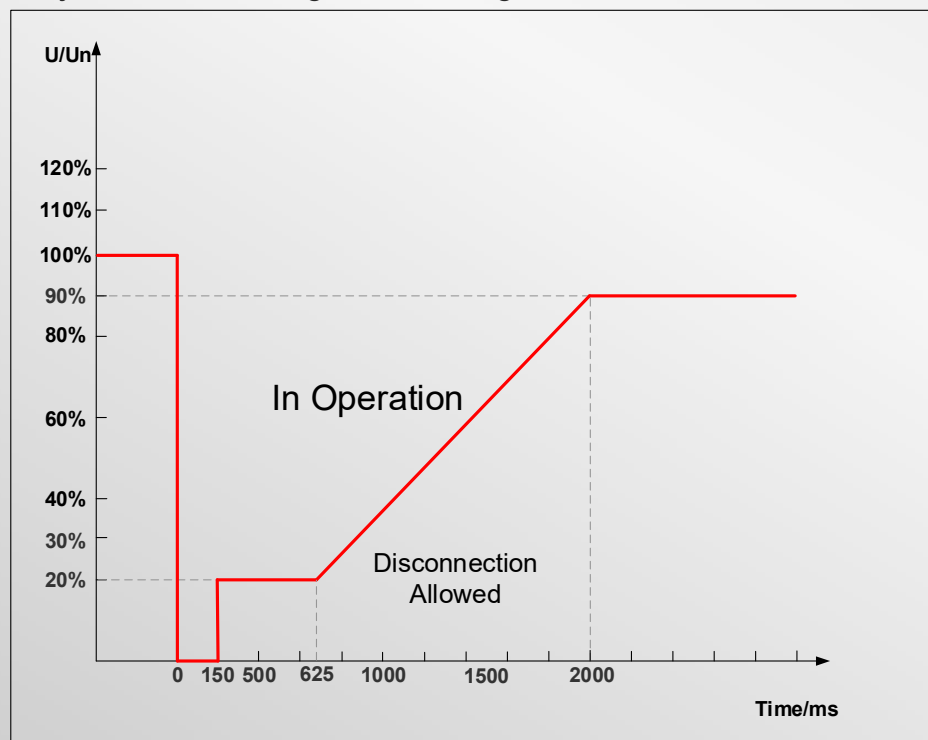
Inverters equipped with SVG function can achieve quick response to reactive power compensation, save cost of the SVG equipment in the system



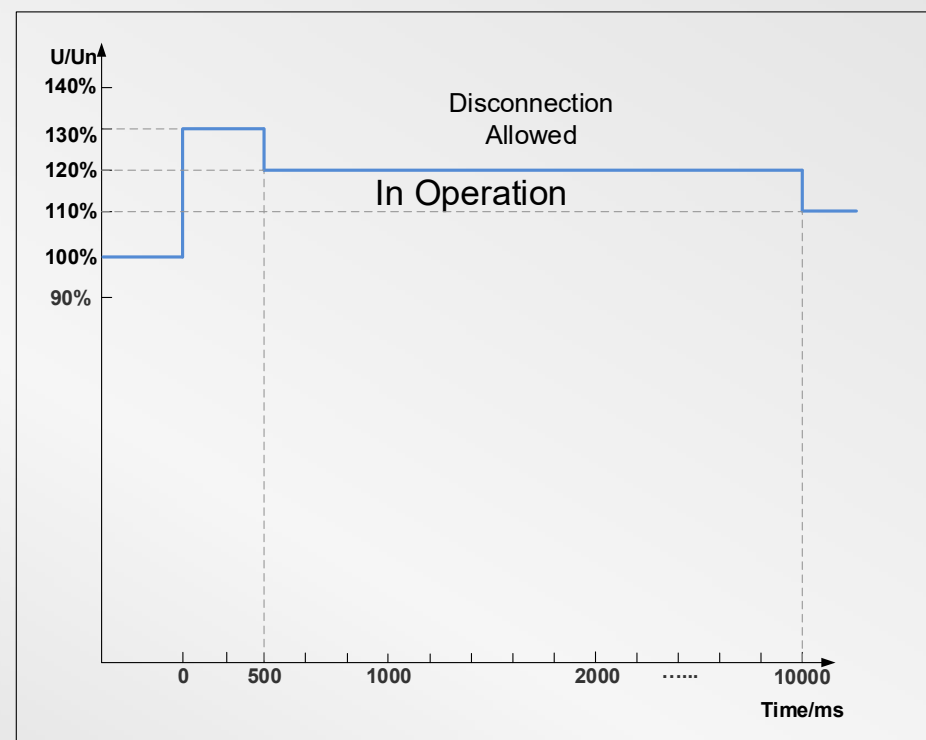
Note:
Where P_n is the nominal power, and P and Q are the operating active power and reactive power respectively

Grid Support – LVRT/HVRT

Integrated with LVRT/HVRT function can stabilize and support the grid, and voltage and time at different point are adjustable according to different grid code



LVRT Curve



HVRT Curve



Comparison with container ESS **04**

Powering Green Future



Comparison with Container ESS



VS



Item	All in one outdoor cabinet KAC/BC100DME SERIES	All in one container KESS SERIES
Energy density	Higher	Lower
Expandability	More flexible	Limited to container size
Reliability	Higher with PCS separating each battery system	Lower with centralized battery system
Component arrangement	More integrated	Independent component placed in container
Auxiliary equipment design	More focused and tailored to the standard application	Generic design
Product development	Standardized product	Customized to different application
Certification	Easier to maintain for modular PCS and battery cabinet	Harder to maintain for PCS and battery racks for different capacities



PART 04
C&I ESS Reference
Powering Green Future



