

---

# KAC50DP/BC100DE Product Introduction

---



## **PART 01**

# **KSTAR Company Profile**

Powering Green Future

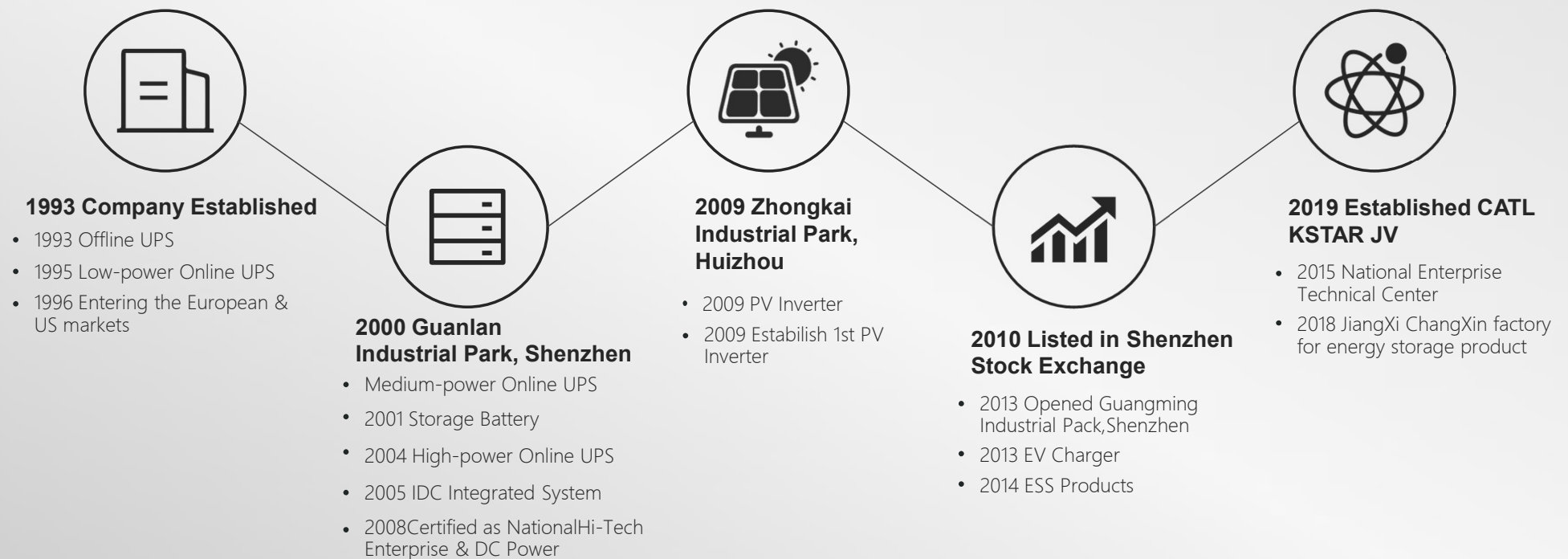
## Company Profile

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



KAC50DP-BC100DE

## Highlights:

### Safe&Reliable

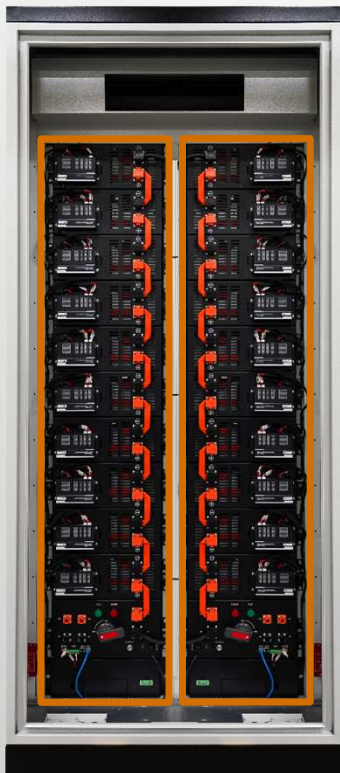
- **CATL LFP** battery cell
- Double fire suppression system design
- 1+1 redundancy design

### 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** ◀

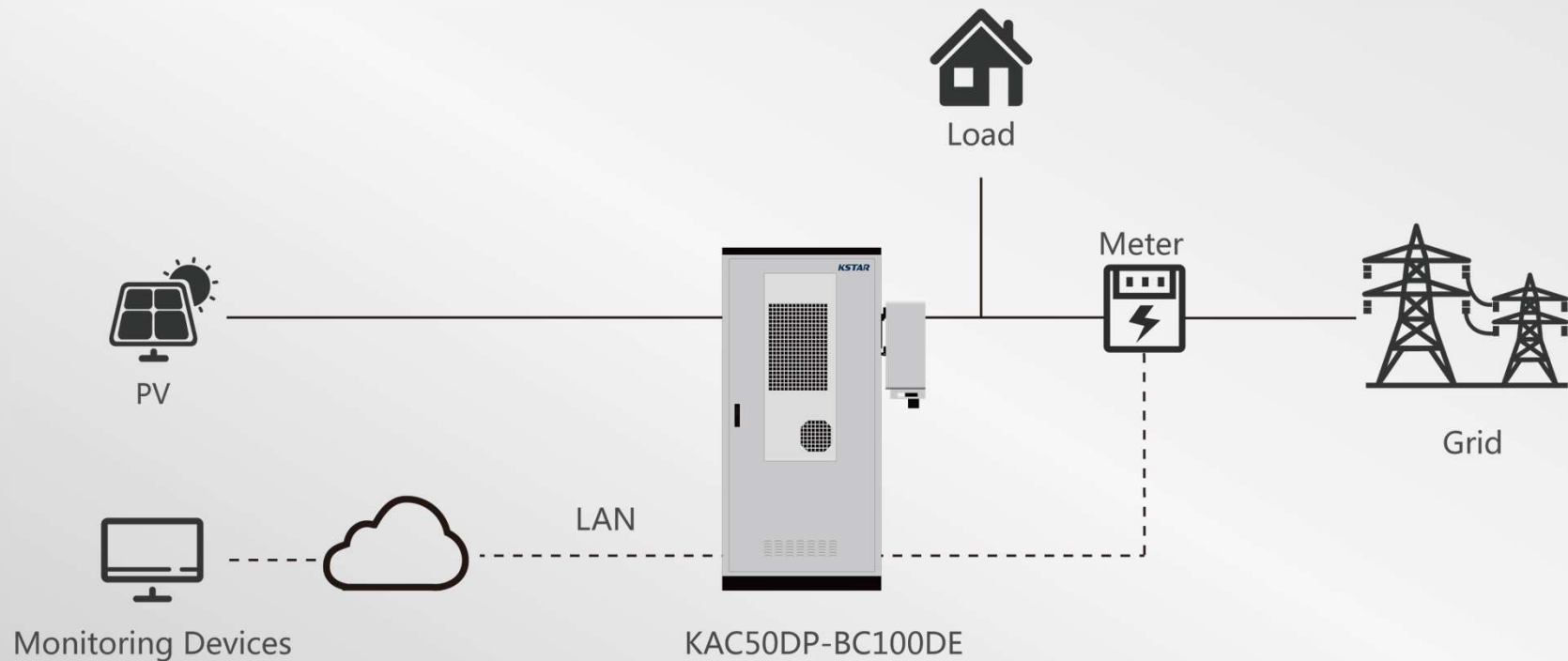
**Provide third party communication interface for upper level monitoring and control** ◀





## System Application

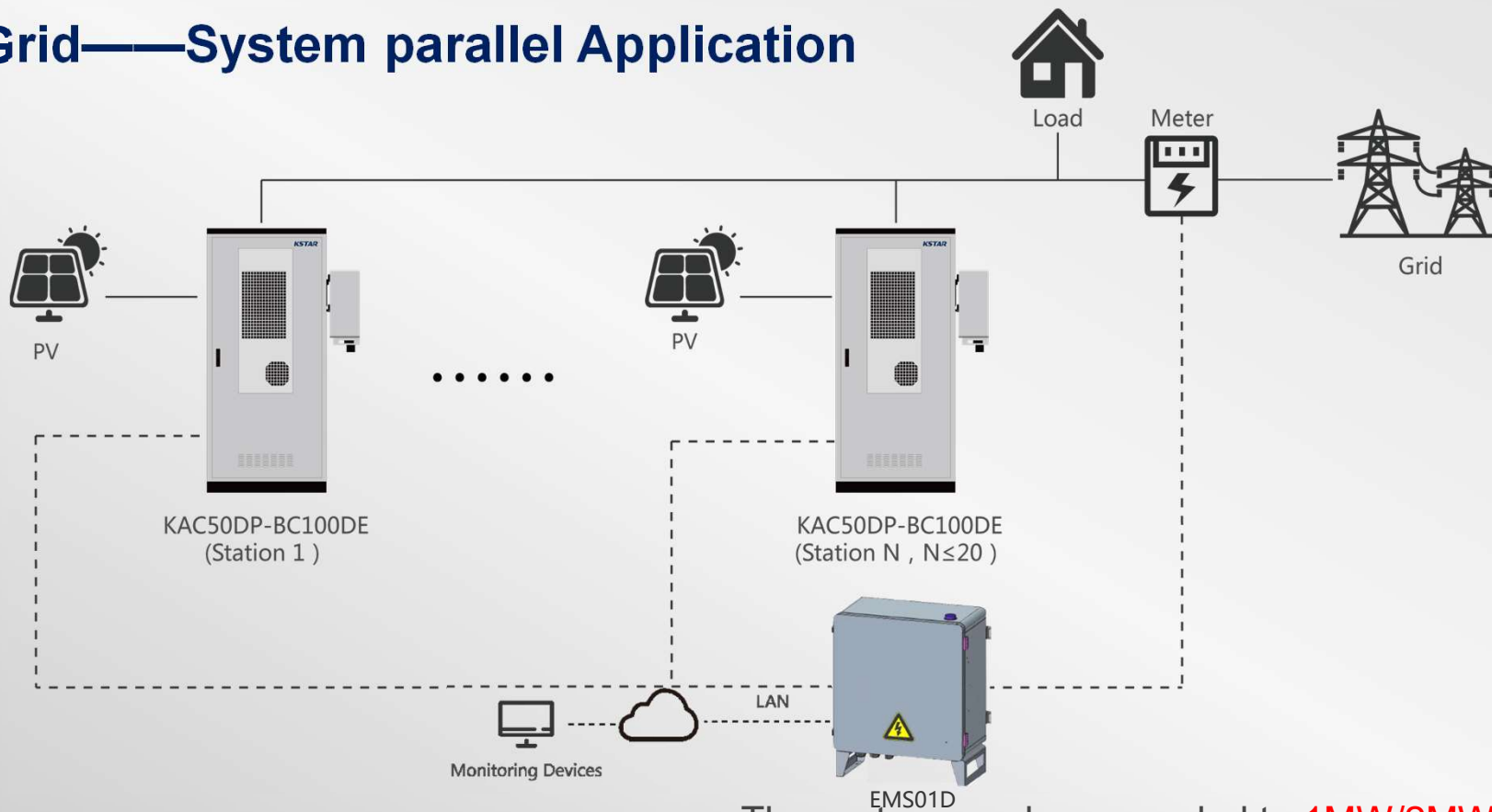
### ➤ On-Grid——Single System Application



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

## System Application

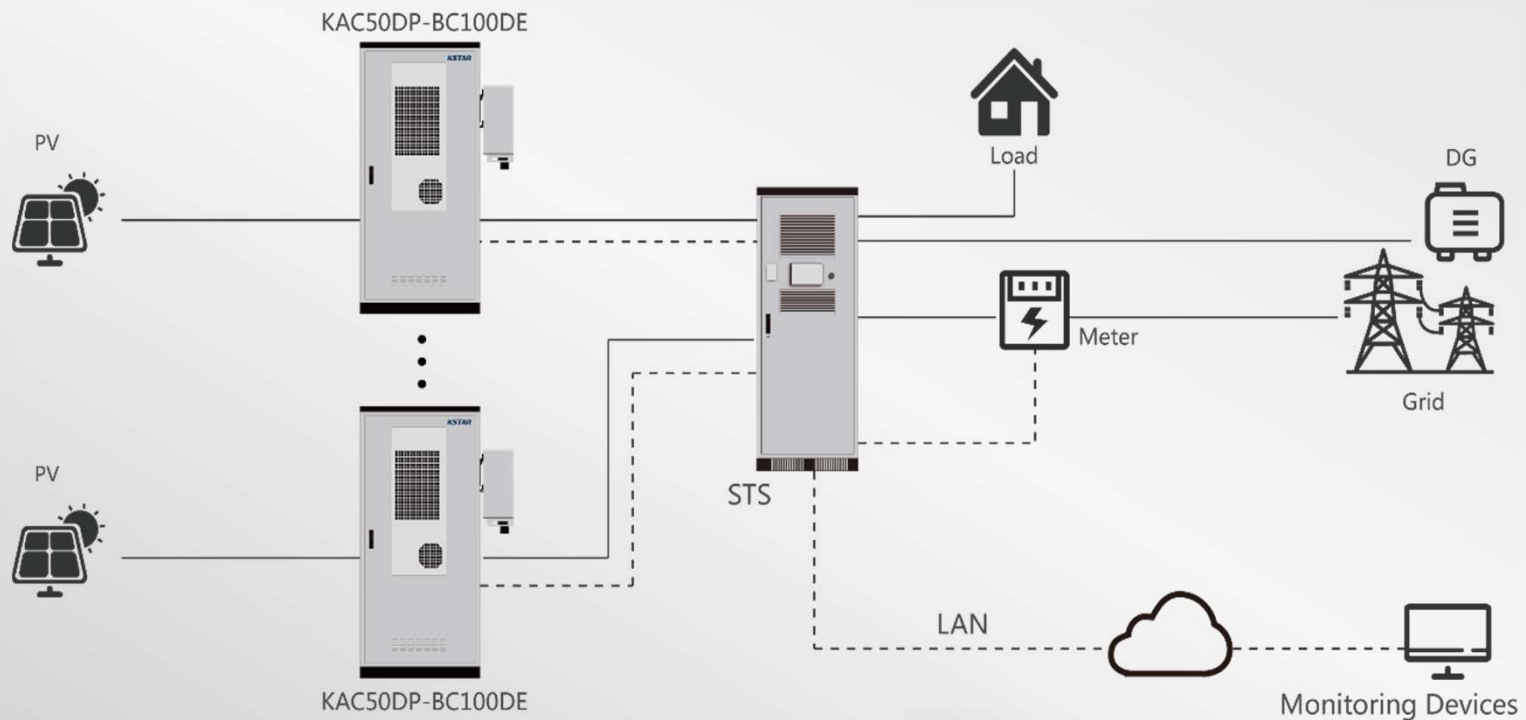
### ➤ On-Grid——System parallel Application



The system can be expanded to 1MW/2MWH (4MWH)

# System Application

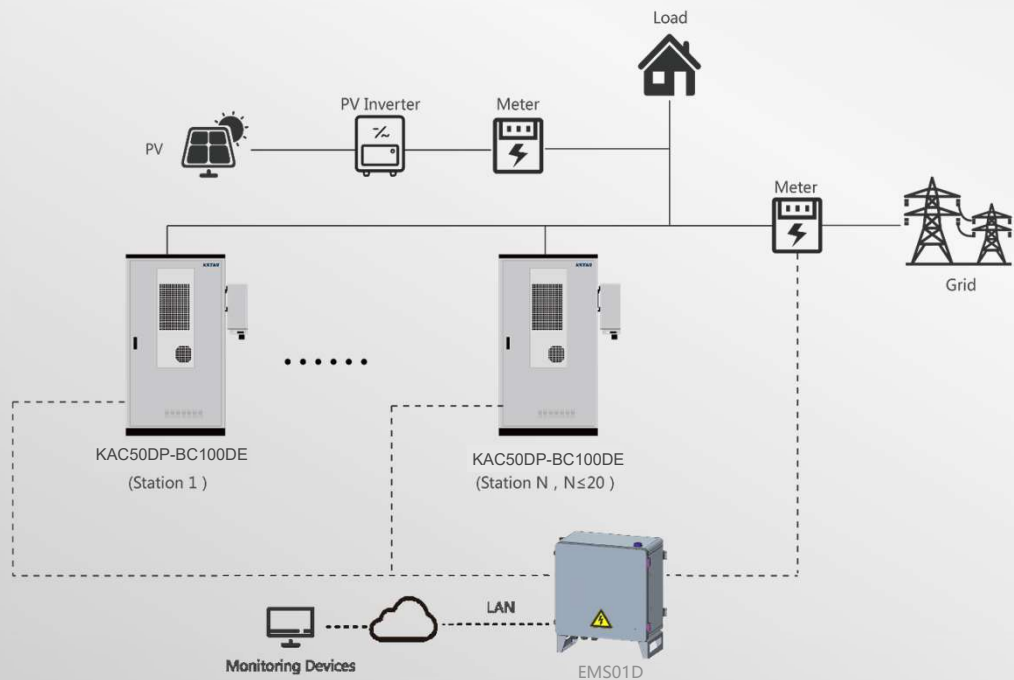
## ➤ Backup Application



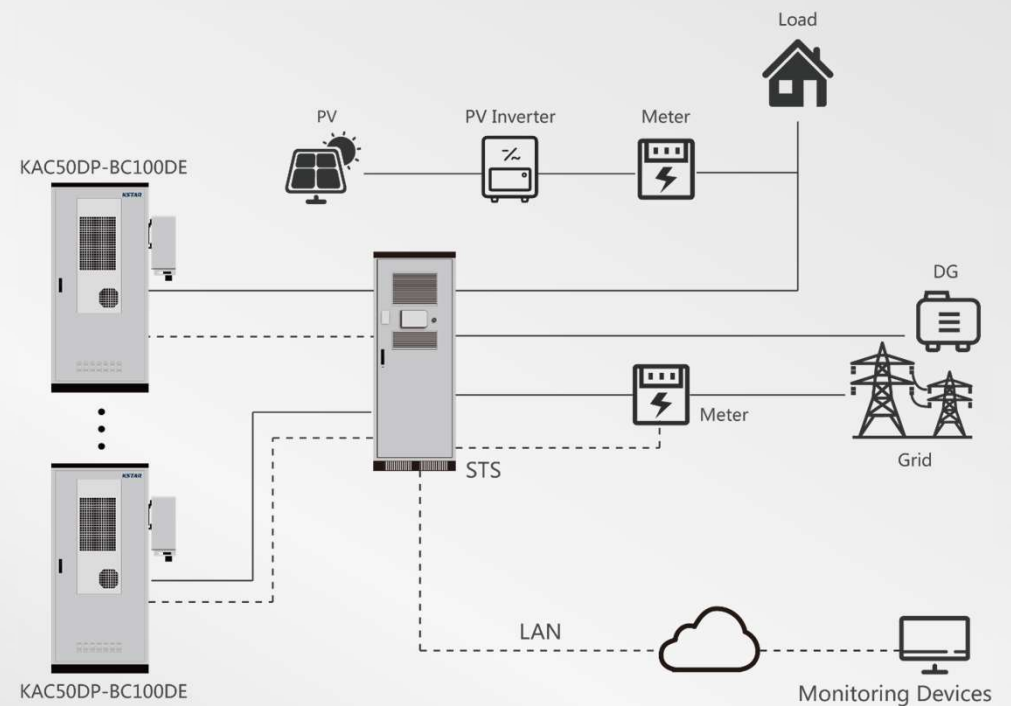
The system can be expanded to **250kW/500KWH(1MWH)**

# System Application

## ➤ AC coupling Application



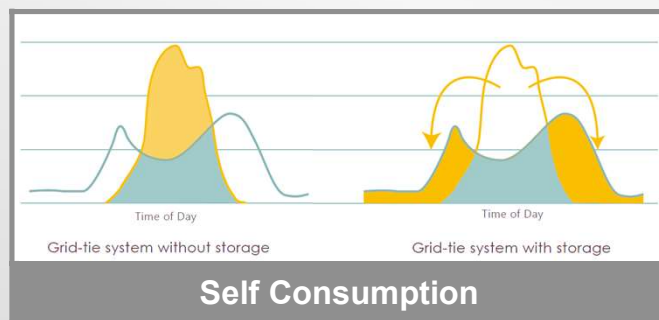
On-Grid



Backup

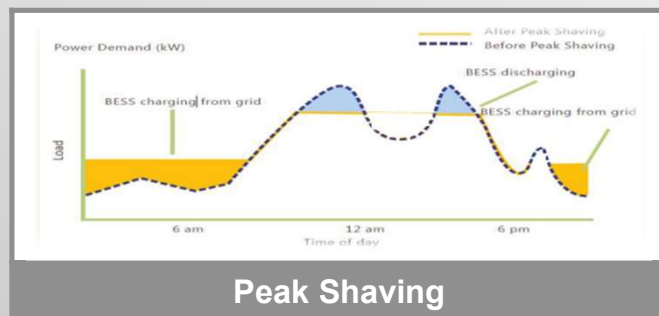
# Flexible work mode

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.

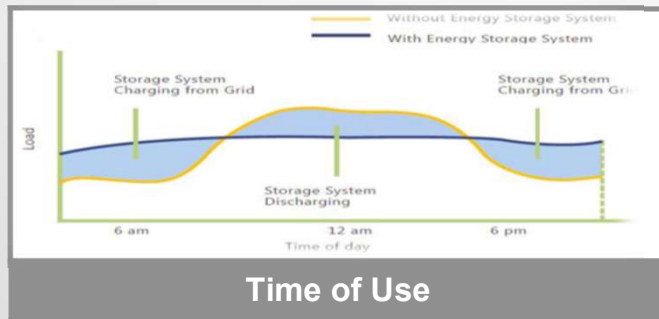


**Strategy:** When the power extracted from the grid falls outside the peak/valley range, the battery start to discharge/charge.

**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.



**PART 03**  
**C&I ESS Highlights**  
Powering Green Future

# Technical feature overview

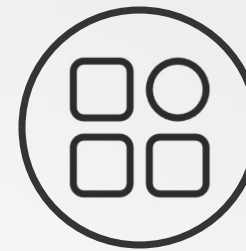
KAC50DP/BC100DE



**Safety**



**User friendly**

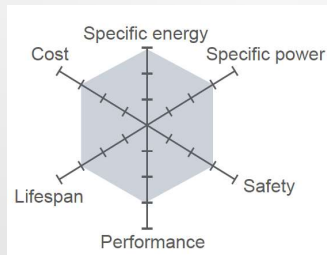


**Multifunctional**



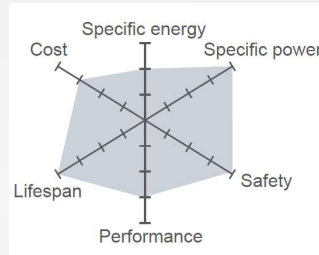
## Safety , Reliability, Long life of CATL Cell

### Safety 1



**NCM**

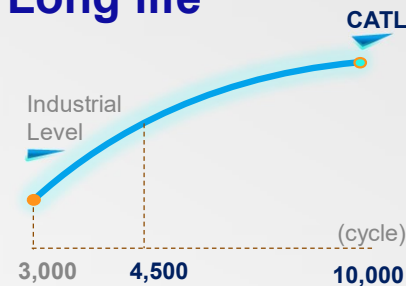
- Unstable crystal structure
- Thermal runaway temp.: 200°C



**LFP**

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

### Long life

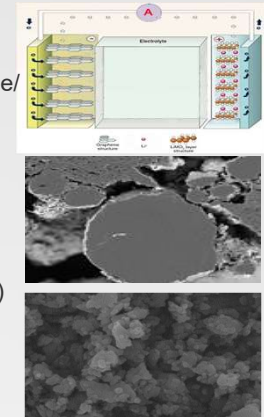


- CATL LFP battery with the cell life up to 10000 times, leads the battery industry.

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



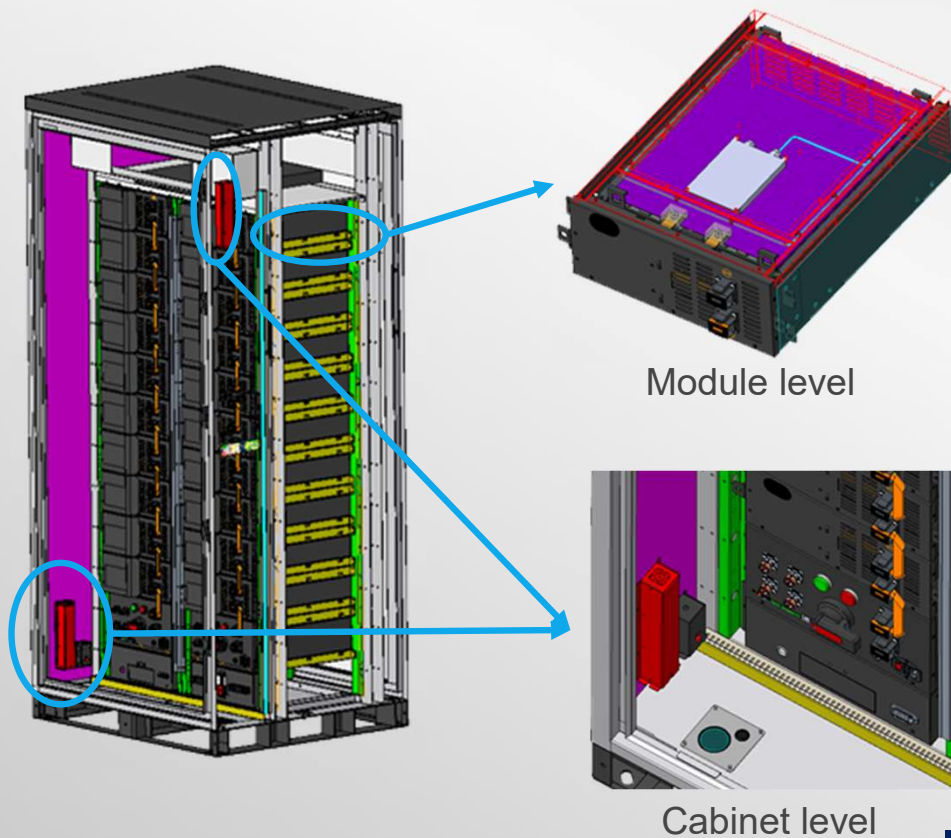
**Plastic Prismatic**

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

- ◆ Each module is fitted with efficient, environmentally friendly **aerosol** that is released when sensor detects abnormal temperature to minimize fire effects.

### Cabinet level

- ◆ The two corners of the battery cabinet are also placed in the **aerosol**, this dual fire extinguishing design makes the entire ESS safer.

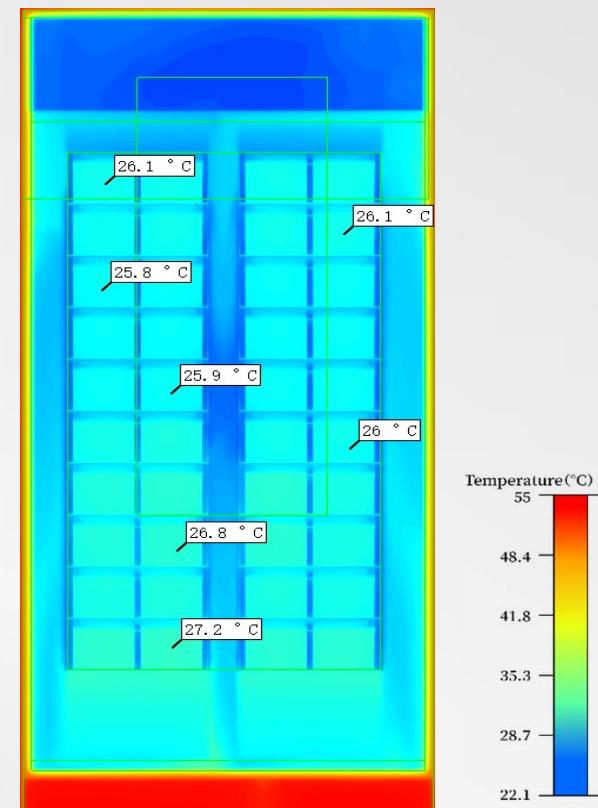
## Built-in HVAC system

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



Air Condition

- Smart cooling with Tier 1 industrial air conditioning system
- Compact design with wall mounted
- Optimum wind path to ensure high cooling efficiency and low temperature difference(max.  $<5^{\circ}\text{C}$ )
- Enclosed cabinet for better HVAC performance



Ambient Temp: 55 degree Celsius

## Easy installation

*Factory*



- Pre-assembled in the factory

*Transportation*



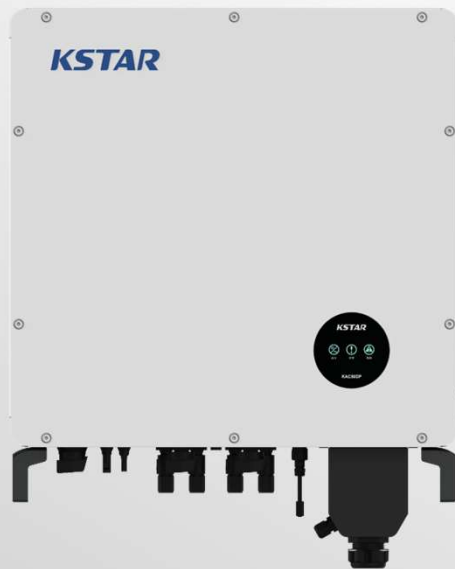
- Container transportation

*Installation*



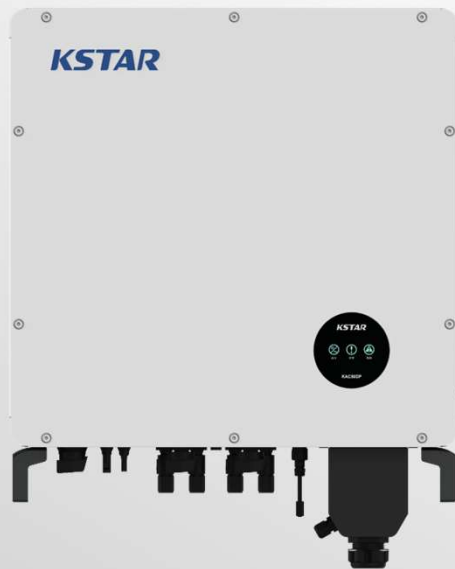
- Forklift transportation

# KSTAR 50kW modular hybrid power converter



| 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                        | 55A*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                       | 50/60Hz±5Hz            |
| Nominal Grid Frequency/Frequency Range | <3%(100% load)         |
| THDv                                   | -1(Lagging)~1(Leading) |
| Adjustable PF Range                    | 340V~440V              |

# KSTAR 50kW modular hybrid power converter



| KAC50DP                                   |                                                                                            |
|-------------------------------------------|--------------------------------------------------------------------------------------------|
| <b>Efficiency</b>                         |                                                                                            |
| Max. Efficiency                           | 97.5%                                                                                      |
| <b>Protection</b>                         |                                                                                            |
| Reverse Connection Protection             | Yes                                                                                        |
| DC Switch                                 | Yes                                                                                        |
| Over-Temperature Protection               | Yes                                                                                        |
| Grid Monitoring/ Earthing Fault Detection | Yes                                                                                        |
| Insulation Monitoring                     | Yes                                                                                        |
| DC/AC Surge Protection                    | Yes                                                                                        |
| Reverse Connection Protection             | DC Type II;AC Type III                                                                     |
| <b>General Parameters</b>                 |                                                                                            |
| Dimensions(WxHxD)                         | 650*715*325mm                                                                              |
| Weight                                    | 75KG                                                                                       |
| 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                   | 3000m                                                                                      |
| Communication Port                        | RS485/CAN                                                                                  |
| Standards                                 | IEC62477;IEC61000;CE;GB/T;IEC62109;IEC61683;IEC60068;IEC61727;IEC62116;EN50549;VDE4105;G99 |



## KSTAR 100kWh outdoor battery cabinet



| Technical Parameters    | BC100DE                             |
|-------------------------|-------------------------------------|
| 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 Parameter       | BC100DE                             |
| 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 04**  
**C&I ESS References**  
Powering Green Future



## Ireland 100KW-200KWH Project

### Location:

22 South Village, Dublin, Ireland

### Project overview:

This project is located in the south country of Dublin, Northern Ireland, and the user will place the commercial storage machine in the factory. The project scale is two KAC50DP-BC100DE parallel operation, both using Kstar products.

### Highlight:

- 1、Two System, On grid, Parallel operation.
- 2、 Under self Consumption working mode, customers began to make profits in about 4 years.



## England 50KW-100KWH Project

### Location:

West Meadow Lane, Farwellshire, Cornwall, England

### Project overview:

This project is located in the West county of England, placed in a semi-outdoor space, the project is a KAC50DP-BC100DE stand-alone operation.

### Highlight:

- 1、Based on the customer's existing grid-connected photovoltaic inverters, we provide customers with AC-coupled, Self Consumption working mode systems.
- 2、Under self Consumption mode, customers begin to make profits in about 6 years.

