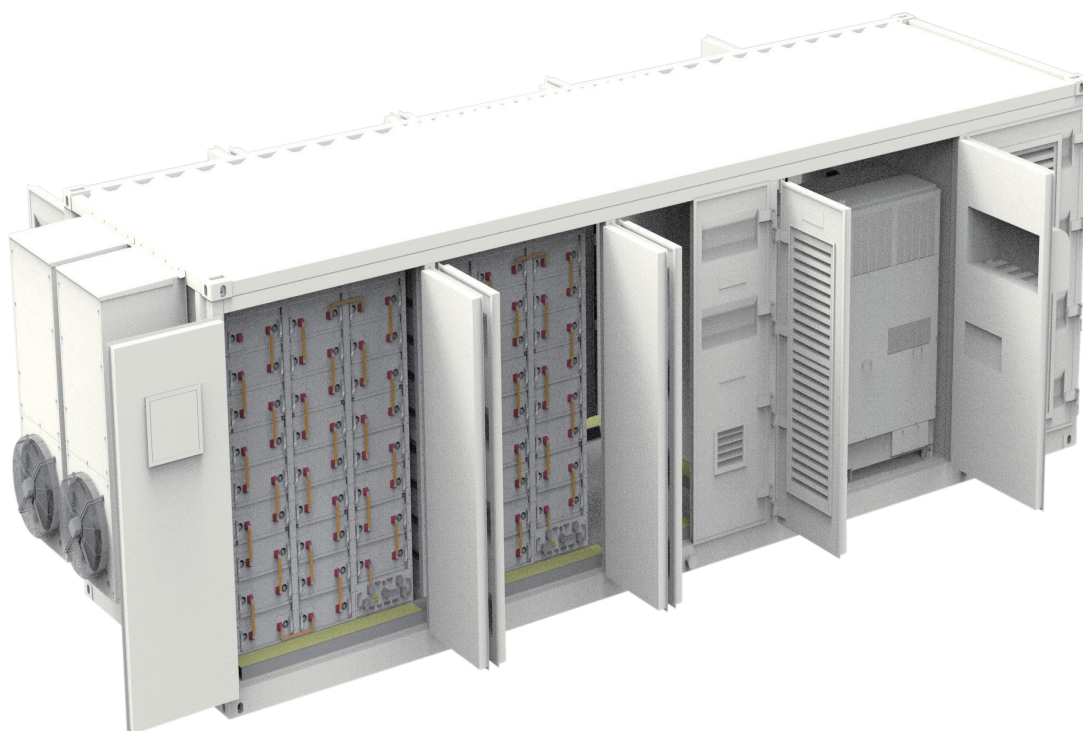


## Industrial and commercial energy storage systems of 0.5~1MKWh

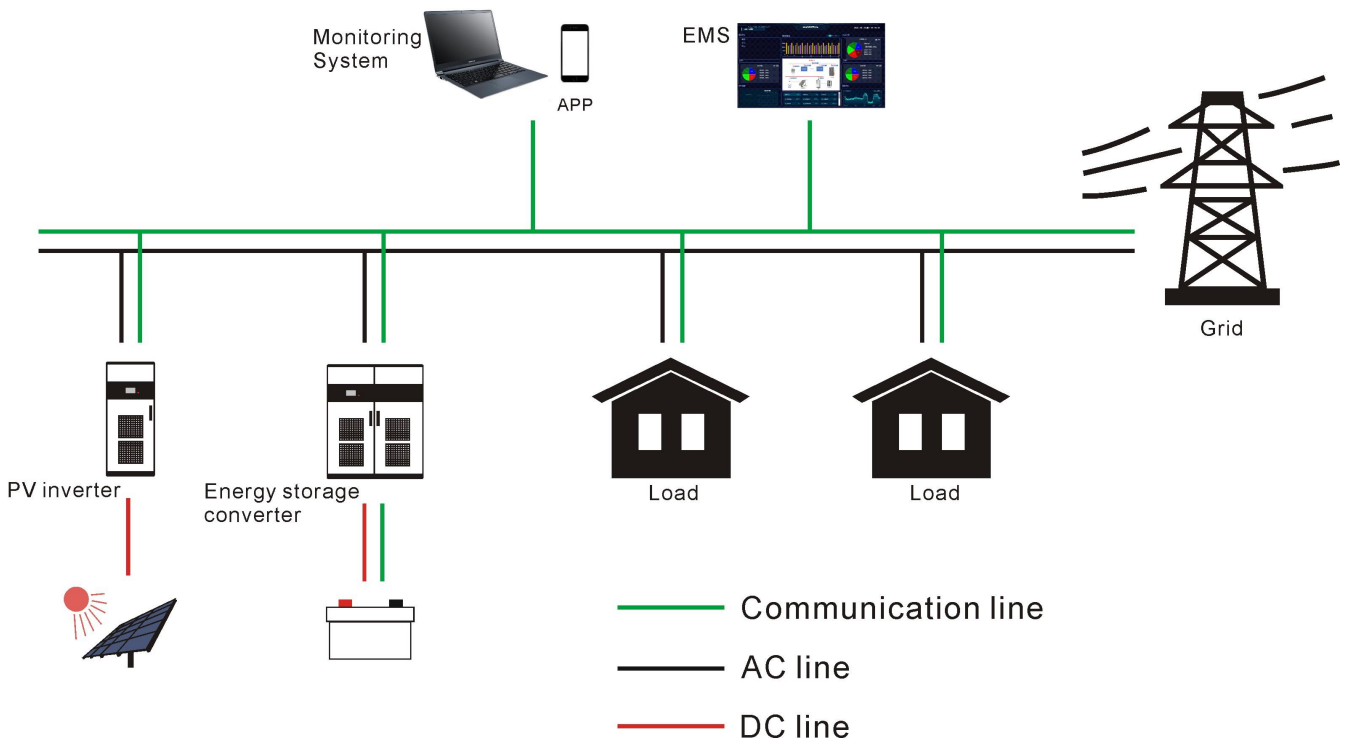


# 1. General description

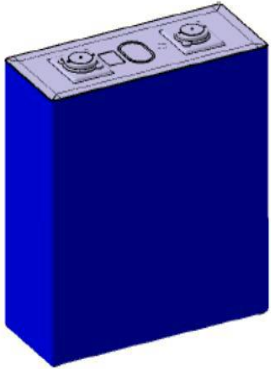
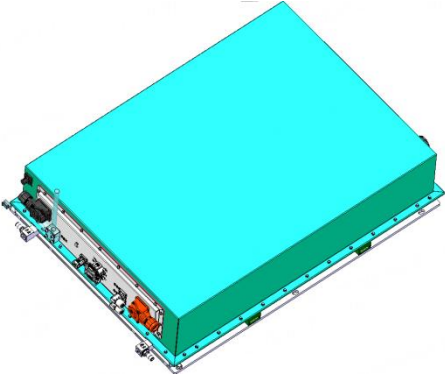
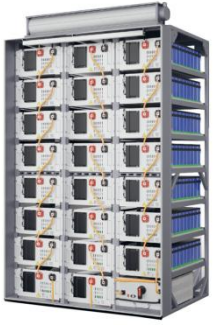
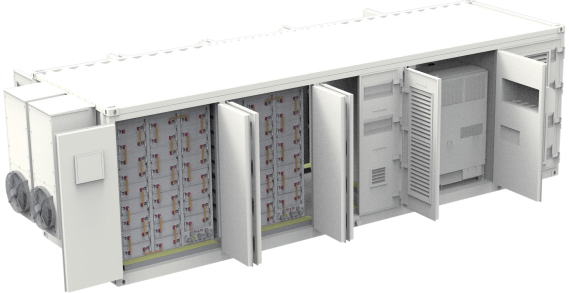
The object of this proposal is the energy storage system solution which is packed into an outdoor cabinet.

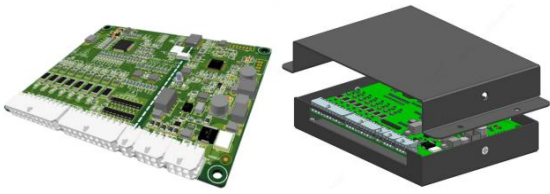

This solution has integrated almost everything needed for an On-Grid ESS solution, including battery system、 power convertor system、 energy management system、 fire protection system.

System schematic design drawing:



## 2. Key Components inside the cabinet

Cell Basic Parameters		
Model	BYD 300Ah	
Rated Capacity [Ah]	300	
Rated Voltage [V]	3.2	
Total energy [Wh]	960	
Nominal work current [A]	150	
Dimensions [mm]	71*173*207	
Module Basic Parameters		
Configuration	1P8S	
Rated Capacity [Ah]	300	
Rated Voltage [V]	25.6	
Total energy [Wh]	7680	
Nominal work current [A]	150	
Dimensions [mm]	270*450*500	
Battery cluster		
Configuration	1P224S	
Rated Capacity [Ah]	300	
Rated Voltage [V]	716.8	
Total energy [Wh]	215K	
Nominal work current [A]	150	
Dimensions [mm]	800*1600*2200	
Battery system		
Configuration	5P224S	
Rated Capacity [Ah]	1500	
Rated Voltage [V]	716.8	
Total energy [Wh]	1.07M	
Nominal work current [A]	750	
Dimensions [mm]	6050*2438*2896	

<p style="text-align: center;"><b>BMS-BMU</b></p>	
<p>BMU is the battery acquisition board (slave board), which has 16 maximum voltage acquisition channels and 16 maximum temperature acquisition channels. Suitable for scenario applications such as energy storage.</p>	
<p>Maximum support for 16 single battery voltage monitoring.</p>	
<p>Support up to 16 channels of NTC temperature monitoring.</p>	
<p>Support 1-way DI input and 1-way DO dry contact.</p>	
<p>Supports passive balancing, with a maximum balancing current of 120mA.</p>	
<p>Bootloader upgrade is supported, and firmware upgrade can be performed online via CAN bus.</p>	
<p>Support acquisition low power consumption mode.</p>	
<p>Support monomer SOC/SOH calculation function.</p>	
<p>Support the sampling line disconnection detection function and support the application of 1000V energy storage system.</p>	
<p>Vehicle gauge level acquisition chip, high reliability application.</p>	
<p style="text-align: center;"><b>BMS-BCMU</b></p>	
<p>BCMU is battery cluster level battery management controller based on distributed architecture.</p>	
<p>Support battery status data processing.</p>	
<p>Support group/cluster terminal voltage detection.</p>	
<p>Support group/cluster end current detection.</p>	
<p>Support the battery system insulation detection function.</p>	
<p>Support SOC/SOH/SOE/SOP estimation.</p>	
<p>Support active thermal management control function.</p>	
<p>Support fault detection/alarm/protection functions; Support data storage function.</p>	
<p>Support system expansion functions.</p>	
<p>Support CAN and RS-485 communication functions.</p>	
<p>Bootloader upgrades are supported, and applications can be upgraded online via the CAN bus.</p>	

### 3. Energy storage converter



Technical specification	500	630
<b>DC(battery)</b>		
Voltage range[V]	600~900	
Max current[A]	929	1170
<b>AC(on-grid)</b>		
Max output power[KVA]	550	693
Rate output power[KW]	500	630
Rated voltage[V]	400	
Voltage range[V]	320-460	

Rated current[A]	722	909
Max.output current[A]	794	1000
Rated frequency[Hz]	50/60	
Frequency range[Hz]	45~55/55~65	
THDi	<3%	
Power factor	lagging-leading(Settable)	
AC connection	3W+PE	
<b>General data</b>		
Max.efficiency	98.7%	
Ingress protection	IP21	
Noise emission[dB]	<70	
Operating temperature[°C]	-30~55	
Cooling	Forced air	
Relative humidity	0~95% non-condensing	
DimensionW*D*H[mm]	1200*800*2050	1000*700*2050
Weight[Kg]	950	
Transformer	NO	
Self-consumption[W]	<100	
<b>Display and communication</b>		
Display	LCD touch-screen	
BMS communication	RS485/CAN	
EMS communication	RS485,TCP/IP	

## 4. PV inverter



	100KTR	100KTR-F	110KTR	110KTR-F	136KTR-L	136KTR-LF	136KTR-X	136KTR-XF
<b>Input (DC)</b>								
Max. Input Power	150KW				160KW			
Max. Input Voltage	110V							
Start Voltage/ Min Operating Voltage	250V~180V							
MPPT Voltage Range	180V~1000V							
Number of MPP Trackers	9/2		10/2		12/2			
Max Current per MPPT	26A	30A	26A	30A	26A	30A	26A	30A
<b>Output (AC)</b>								
Max. Output Current	158.8A		174.6A		174.6A		160.4A	
Rated Output Current	144.3A		158.8A		163.5A		145.4A	
Rated Output Power	100KW		110KW		136KW			
Max Apparent Power	110KVA		121KVA		150KVA			
Rated Grid Frequency	50Hz/60Hz(adjustable)							
Rated Grid Voltage	230V/400V,3L+N+PE/3L+PE				277V/480V,3L+N+PE/3L+PE		311V/540V,3L+N+PE/3L+PE	
Power Factor	-0.8~+0.8 (adjustable)							
THDI	< 3%(at rated power)							

<b>Efficiency</b>			
Max. Efficiency	99%		
European Efficiency	98.5%		
MPPTEfficiency	99.9%		
<b>Protection</b>			
Protection	DC switch, Anti-islanding protection, Input over current protection, Output over current protection, DC reverse connection protection, String fault protection, Surge protection Insulation resistance detection, AC leakage current detection, PID repair Low voltage ride through, Arc fault detection, Night SVG function, etc.		
<b>Communication</b>			
Display	LED /LCD/Bluetooth+App		
Communication	standard: RS485 /USB optional: WiFi/DRM /Bluetooth		
<b>Standard Compliance</b>			
Grid Connection Standards	IEC 61727, IEC 62116, IEC 60068, IEC 61683, VDE-AR-N 4110:2018, VDE-AR-N 4105:2018, VDE-AR-N 4120:2018, EN 50549, AS/NZS 4777.22015, CEI 0-21, VDE 0126-1-1/A1 VFR 2014, UTE C15-712-1:2013, DEWA DRRG, NRS 097-2-1, MEA/PEA, C10/11, G98/G99		
Safety/EMC	IEC 62109-1:2010, IEC 62109-2:2011, EN 61000-6-2:2005, EN 61000-6-3:2007/A1:2011		
<b>General Data</b>			
Dimensions(W*H*D)	1050x660x330 mm		
Weight	95Kg	98Kg	101Kg
Operating Temperature Range	-30°C ~ +60°C (derating above 45°C)		
Cooling Method	Smart Coolig		
Protection Degree	IP66		
Noise	≤70dB		
Max Operating Artitude	4000m (derating above 3000m)		
Relative Humidity	0~100%		
Topology	Transformerless		
Night Power Consumption	<1W		



## 5. EMS

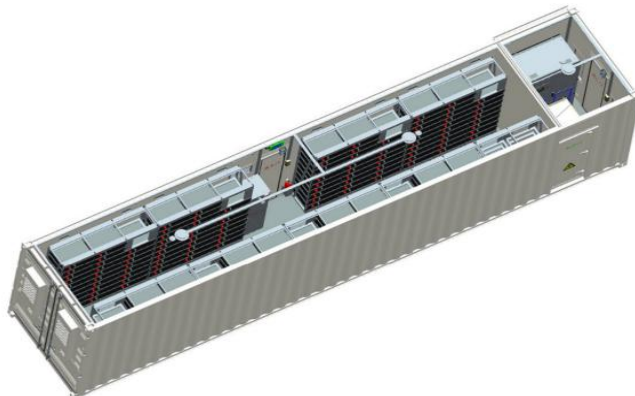


The system has built-in energy storage controller, local operation screen and 4G module. The energy storage controller adopts the IoT architecture based on edge computing, which can realize the intelligent operation of the energy storage system by downloading the decision model from the background or cloud system.

- Data acquisition: Support multiple protocols: Modbus RTU/TCP, IEC103, CAN2.0B.
- Power equipment data, PCS, BMS, air conditioning, fire protection and other equipment monitoring and historical curves.
- Support a variety of control strategies, peak shaving, demand control, new energy support, etc.
- Event record: supports up to 20,000 events.
- Support level 3 fault alarm, alarm linkage output.
- Support data, event, fault.

## 6. HVAC

- Upper air supply design, better cooling effect.
- Integral design, better appearance, no need for a separate outer protective cover.
- Professional dehumidification design to effectively reduce the relative humidity of the application.
- Fan speed control function.
- Remote monitoring function by RS485 communication with MODBUS .
- Automatic start of incoming calls, and a variety of alarm and protection functions.
- Convenient to set parameters and view alarm information from LCD .
- R134a environmentally friendly refrigerant, RoHS compliant.
- High reliability, 365 days/year uninterrupted operation for more than 10 years.
- Easy maintenance, reduce service costs.



## 7. Firefighting system

