

TECHNICAL SOLUTION OF ESS

Utility-Scale (>10MWh)



Energy Management

Peak shaving
Monitoring and indicating status of battery and other equipment.

Easy Expansion

Modular design easy to expansion capacity.

Standard Interface

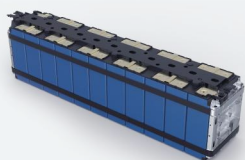
Standard interface for communication and HV connection.

Highly Safety

Liquid cooling system + long life time LFP cell and multiple protection.

Frequency Regulation

Fast response time and high accuracy to provide regulation service for grid.



CATL-LFP-Module

Electrical Safety

Over-current / external short-circuit protection
Insulation monitoring
Equipotential bonding
Electric shock warning

Functional Protection

Overvoltage / undervoltage protection
Overtemperature/ low temperature protection
Overcurrent protection
Communication abnormal protection

Chemical Safety

Flameresistant material
Safety requirements of the battery cell
Identification of hazardous substances
Prevent Battery Thermal Runaway

Mechanical Safety

Vibration resistance
Impact resistance
Explosion-proof

Material Selection

Using a 280Ah lithium iron phosphate battery with high safety and long life time.
The life cycle up to **10000** times



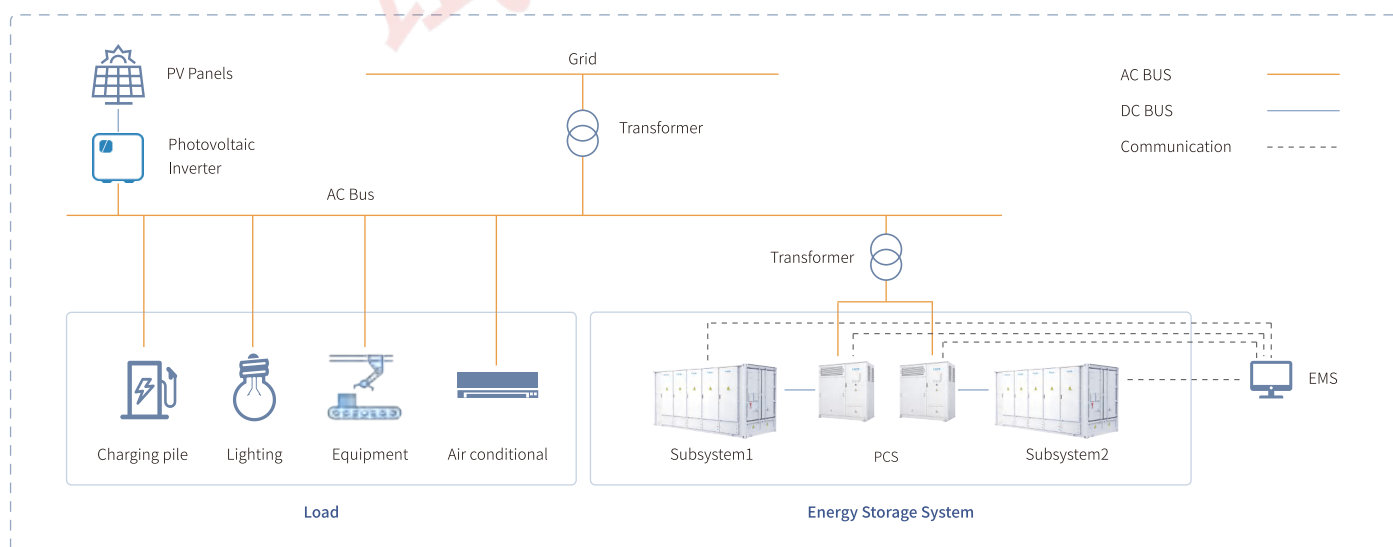
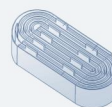
Cell Process

Electrode sheet winding process is not easy to produce burr, decarbonization and Metal particle, low long-term cycle short circuit risk.

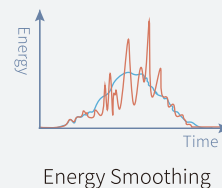
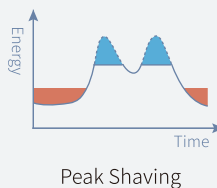
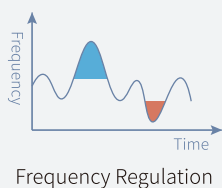


Safety Features

The results of the safety test: no fire, no explosion
lithium iron phosphate has high thermal stability, slow heat production rate and less heat production
lithium iron phosphate does not release oxygen under overcharge and overdischarge



Application Scenario:





ENER C Liquid Cooling Battery Container



PCS

Max. Number of System in Parallel	2			
PCS Specifications	1000kW	1200kW	1500kW	1725kW
Rated AC Power	1000 kVA / kW	1200 kVA / kW	1500 kVA / kW	1725 kVA / kW
Rated Grid Voltage	400 Vac	480 Vac	600 Vac	690 Vac
Max. AC Current	1672A			1448A
Total Harmonic Distortion	<3%			
Rated Grid Frequency (Range)	50 Hz /60Hz			
Peak Efficiency	98%			
Power Factor	-1 to 1 , continuously adjustable			
ENERGY STORAGE				
Rated Energy DC	3727.36kWh			
Voltage Range (Nominal Voltage)	1164.8 ~ 1497.6Vdc (1331.2Vdc)			
Chemistry	LFP			
ENVIRONMENTAL				
Operating Temperature Range / Humidity Range	-20~50 °C (PCS derating at 45 to 55 °C) / 0 to 95% RH non-condensing			
Altitudes	<4000m (derating >2000m)			
IP Ratings	Battery System IP55 , PCS IP54 , Control cabinet IP54			
FEATURES				
Battery Monitoring System	YES – Capable through CNTE monitoring system			
Fire Suppression System	Pre-integrated Fire Suppression system with smoke and heat detectors plus aerosols			
COMPLIANCE				
PCS Related Standards	VDE AR-N 4110 , G99 , IEC 62477 , IEC 61000-6-2 , IEC 61000-6-4 IEEE1547:2018 , UL 1741 , UL1741 SB			
Battery Related Standards	UN 38.3 , UN3536 , IEC 62619 , IEC 61000-6-2/-4 , IEC 62477-1 , UL 1973 , UL9540A			
DIMENSIONS & WEIGHTS				
System Dimensions (mm, W x D x H)	2200 x 1100 x 2280 for PCS, 2462 x 6058 x 2896 for each Battery Container			
Weight of Key Components (kg)	2600 kg for PCS , 3500 kg per 3727.36 kWh Battery Container			

Technical Solution of ESS

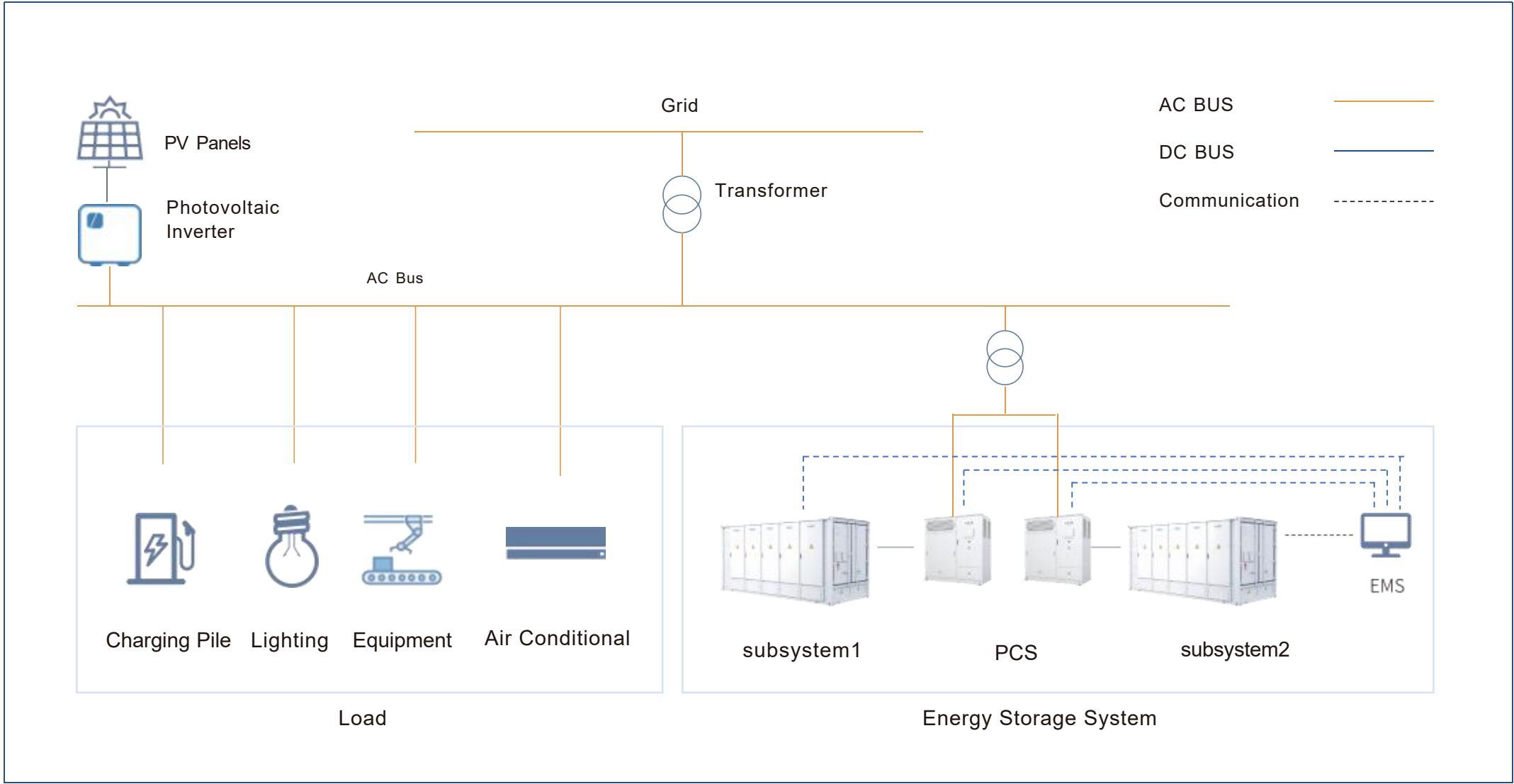
Utility-Scale (Above 10MWh)



STAR-T Liquid cooling Battery Container



PCS



Max. Number of System in Parallel	2		
PCS SPECIFICATIONS			
Rated AC Power	1000 &1725 kVA / kW		
Rated Grid Voltage	480 / 690 Vac		
Max. AC Current	1672/1448A		
Total Harmonic Distortion	<3%		
Rated Grid Frequency (Range)	50 Hz /60Hz		
Peak Efficiency	98%		
Power Factor	-1 to 1 , continuously adjustable		
ENERGY STORAGE			
Product-Model	STAR-T		Ener C
Rated Energy DC	1896.96kWh~3793.92kWh	2036.73kWh~4073.47kWh	3727.36kWh
P-rate	1P	0.5P	0.5P/1P
Cooling mode	Liquid cooling		
Cell	285Ah	306Ah	280Ah
Voltage Range (Nominal Voltage)	1164.8 ~ 1497.6VDC (1331.2Vdc)		
Chemistry	LFP		
ENVIRONMENTAL			
Operating Temperature Range / Humidity Range	-20~50 °C (PCS derating at 45 to 55 °C) / 0 to 95% RH non-condensing		
Altitudes	<4000m (derating >2000m)		
IP Ratings	Energy Storage IP54, PCS IP54, Control cabinet IP54		
FEATURES			
Battery Monitoring System	YES – Capable through CNTE monitoring system		
Fire Suppression System	Pre-integrated Fire Suppression system with smoke detectors, heat detectors (optional), H2 detectors, aerosol , the dry pipe(optional), the smoke exhaust ventilation system		Pre-integrated Fire Suppression system with smoke and heat detectors plus aerosols
COMPLIANCE			
PCS Related Standards	VDE AR-N 4105/ VDE AR-N 4110 / EN50549/ G99/ IEC 62477 / IEC 61000-6-2, IEC 61000-6-4 /UL 1741/ IEEE1547: 2018 / UL1741 SB		
Battery Related Standards	UN 38.3, UL 1973, UL 9540A, IEC 62619, IEC 61000-6-2/-4, IEC 62477-1		
DIMENSIONS & WEIGHTS			
System Dimensions (mm, W x D x H)	2200×1100×2280 for Inverter		
	6058 x 2438 x 2896 for Star-T		6058 x 2468 x 2896 for Ener C
Weight of Key Components (kg)	2600 kg for Inverter, 37000 kg per Battery Container		