

# Company Profile 2020

KSTAR

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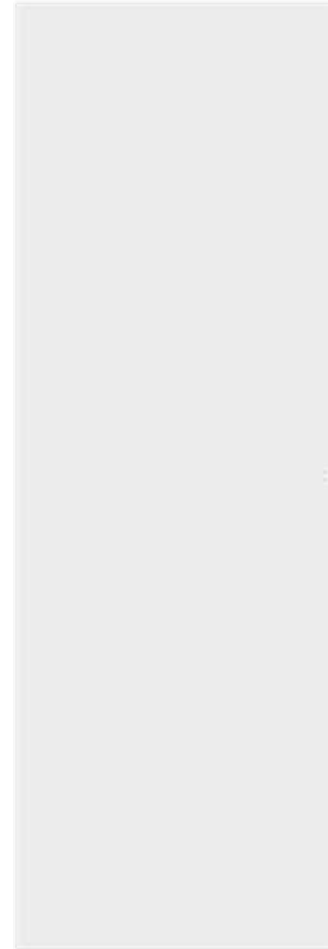
Shenzhen Kstar Science & Technology  
Co., Ltd

客户为本 匠心为质

Customer Focused . Quality Oriented

**About Us**

**01**



KSTAR was founded in 1993 and listed on the Shenzhen Stock Exchange in 2010. As a leading solution provider, we focus on R&D and manufacturing of Data Center, PV Inverter, EV Charging and Energy Storage products, and we are granted the certification of National High-tech Enterprise, National Technological Innovation Demonstration Enterprise, National Enterprise Technology Center and so on.



**KSTAR**  
Headquarter,  
Nanshan District,  
Shenzhen

**KSTAR**  
Industrial Park in  
Zhongkai Hi-Tech  
Zone, Huizhou,  
Guangdong



**KSTAR Industrial**  
Park at  
Guangming Hi-  
Tech Zone,  
Shenzhen

**KSTAR**  
Industrial Park at  
Guanlan Fuyuan  
Industrial Zone,  
Shenzhen





**150+**  
Countries  
and regions



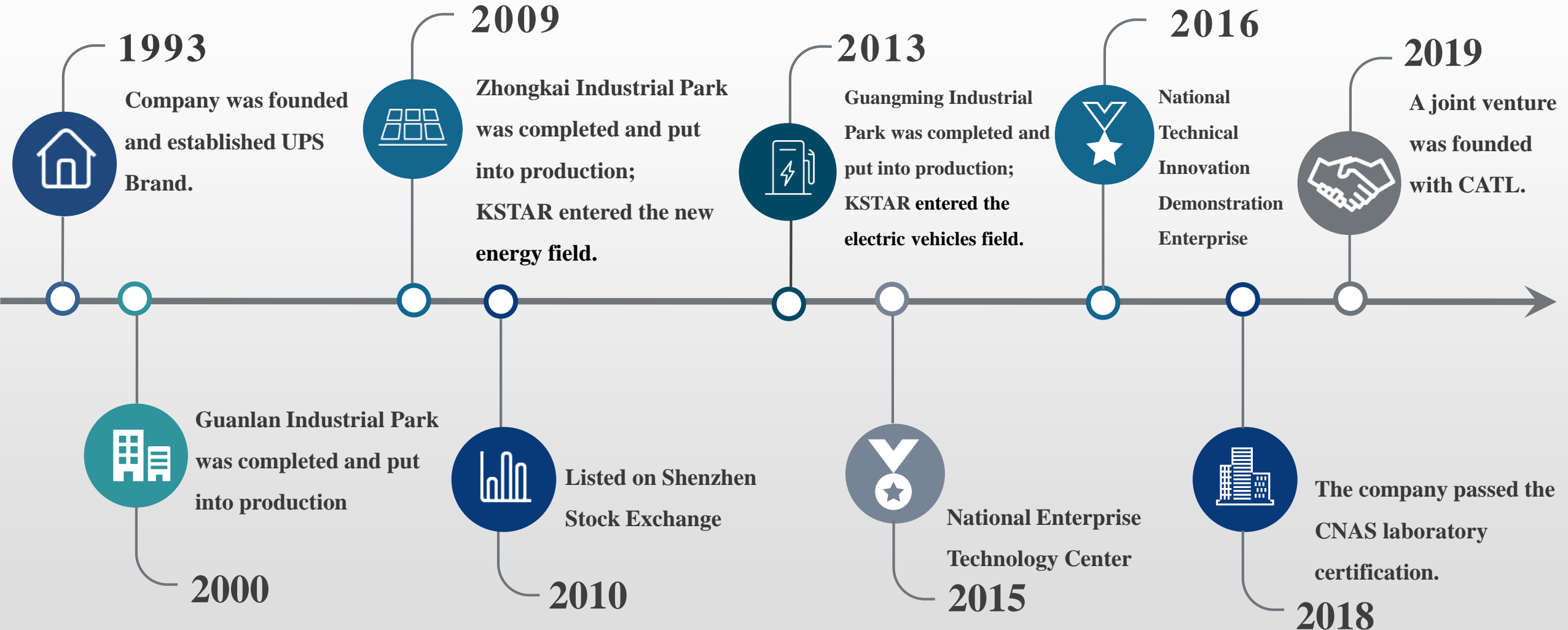
**2800+**  
Employees



**430+**  
R&D  
employees

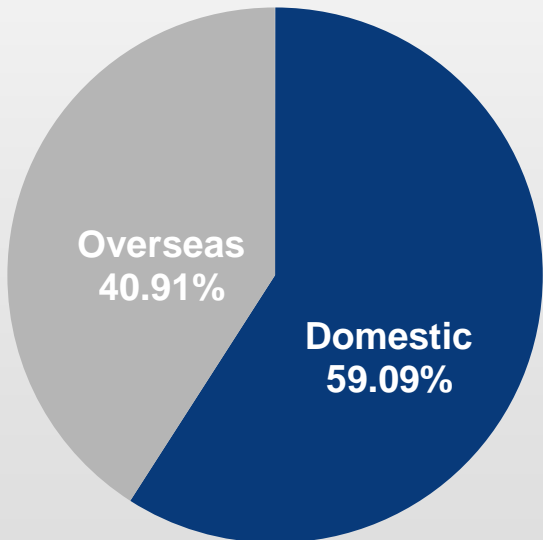


**211**  
Patented  
technologies

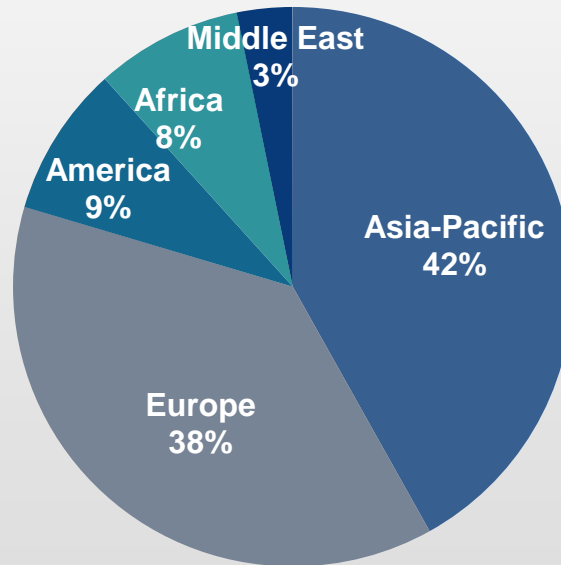


Gross Turnover in 2019  
**USD 410.36 Million**

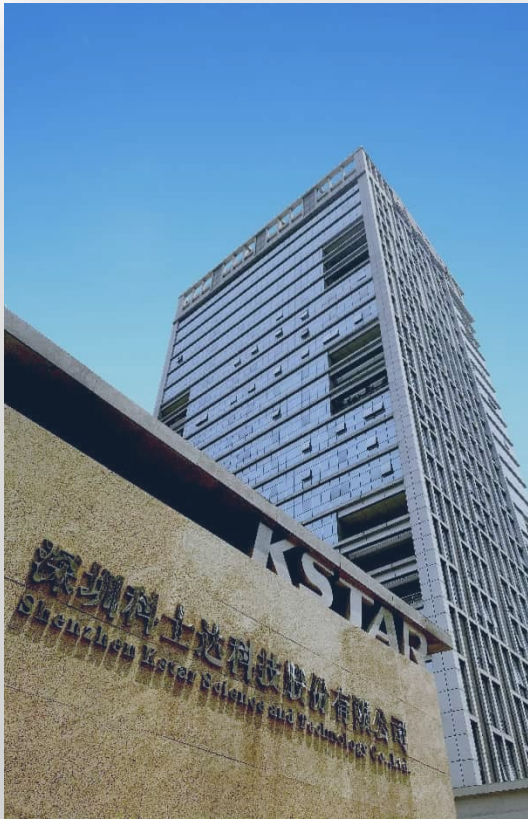
**Percentage of Domestic and Overseas Turnover**



**Percentages of Various Overseas Regions**



- Kstar's business turnover in the data center field accounts for 71.96% of turnover, has a year-on-year growth of 10.23% and maintains a stable growth trend.
- The business turnover in the new energy industry occupies 26.89%.



## Positioning

**Become an enterprise of global influence in the intelligent energy field.**

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## Concept

**Customer Focused and Quality Oriented**

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## Vision

**Become a reliable supplier in the intelligent energy field to create value for our society, customers, investors and employees.**

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## Mission

**Provide reliable intelligent energy integrated solutions to satisfy customers' demand for high-quality energies.**

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900+ Technical Personnel



43 Technical Service Centers



214+ Technical Service Stations



7×24h Response Service



- **KSTAR's business has spread to more than 150 countries.**
- **Focused on customers, KSTAR will bring the high-quality service to the world and create greater value for its customers.**







# The Company's Business Involves Four Major Fields

Data Center



PV Inverter



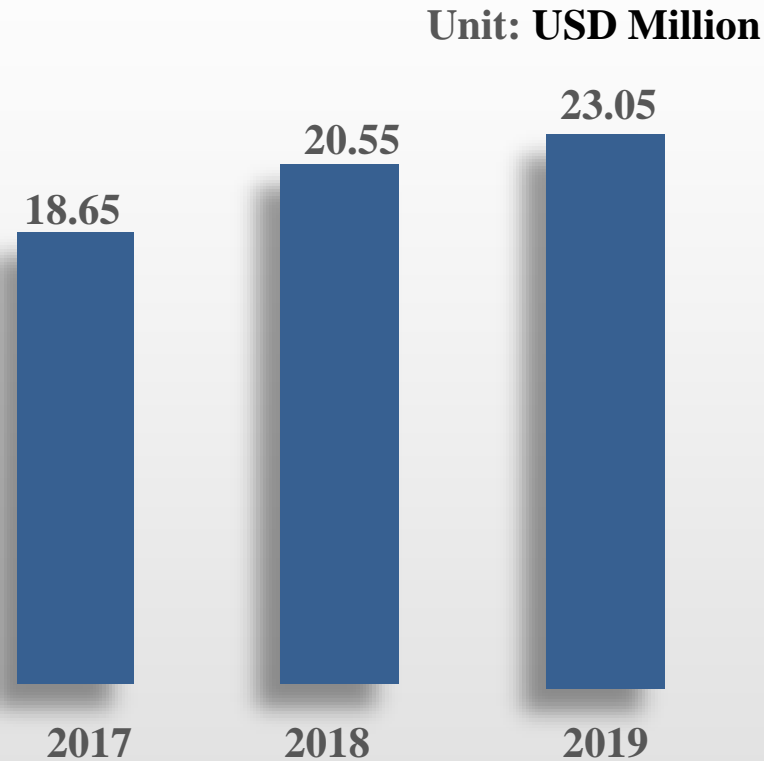
Energy Storage



EV charging pile



## R&D Input



Kstar will always regard “Technology+Quality” as its core cornerstone. It will continuously increase the R&D input, stick to independent innovation and realize the company’s sustainable development. In fact, Kstar has obtained 211 international and domestic patent licenses in total with various patents being licensed, and participated in formulating 53 national and industrial technical standards.

- The total R&D input was USD 62.25Million from 2017 to 2019;
- The 2019 R&D input occupied 6.05% of whole business income.

## AI/SMT Workshop



SMT Production Line



AOI



Full-automatic Triple-protection Coatings

## UPS Workshop



UPS Assembly



ATE Platform



Aging Test Workshop

## Precision Air Conditioner Workshop



Precision A/C Assembly



Precision A/C Leak Detection



Precision A/C Testing

## EV Charging Piles workshop



Charging Piles Assembly



ATE Platform

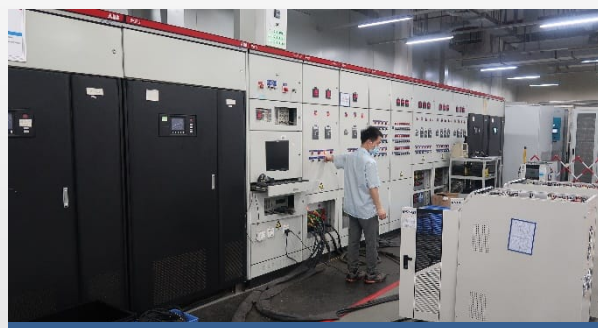


Modular Ageing Test System

## PV Inverter workshop



PV Inverter Assembly



ATE Platform



Inverter Ageing Test System

## Storage Battery workshop



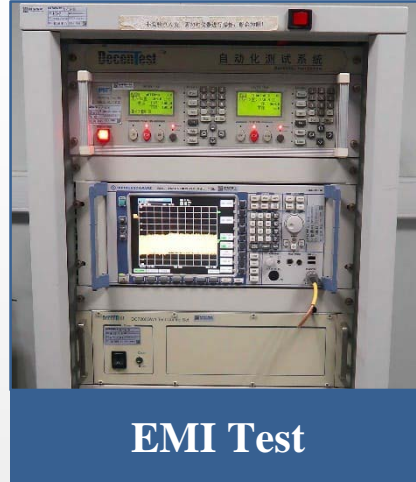
Storage Battery Assembly



Multifunctional Detector



Charge & Discharge Inspection Device





Generator (2MW)



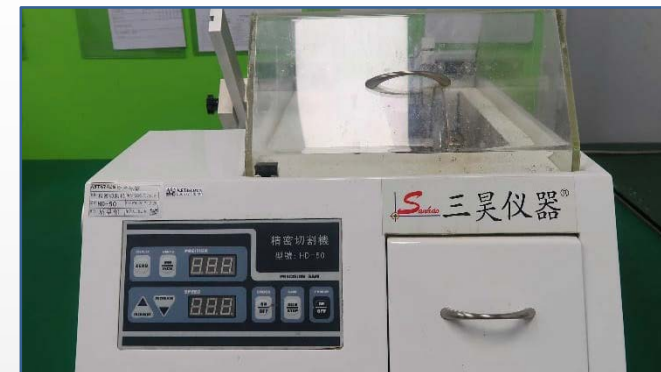
AC Input



DC Input



Failure Analyzer



Precision Cutter



R&D Test (2MW)



Load Test (2MW)



Precision Detector

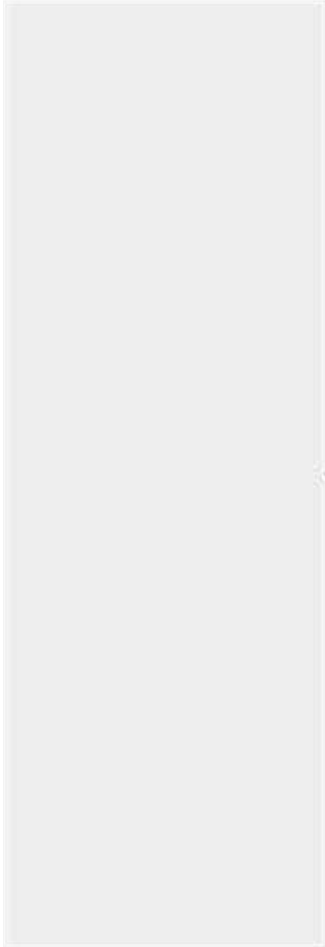


Polisher



**Product  
Lines**

02



## Integrated Solutions



## Core Products



Efficient and Energy-saving

With the high-efficient modular UPS, dual-EC design, EEV and VFD self-developed air conditioner, it possesses the AI adjustment function and can effectively reduce PUE.

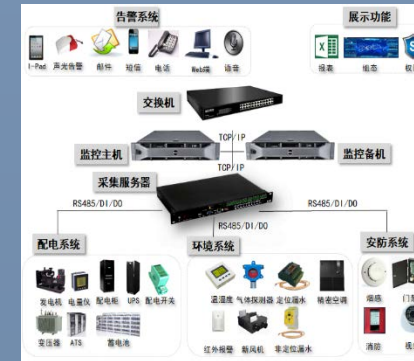
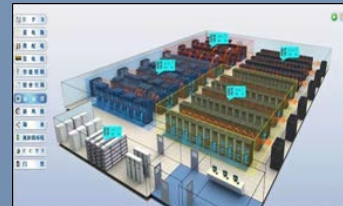
Fast Deployment

By virtue of the modular product, the pre-integration and presetting in factory and the modular deployment of installation, the accelerated delivery can be realized; main components are independently researched and produced to guarantee the delivery period.

Safe and Reliable

With various key technologies including the anti-sweeping batter tray patent, the self-developed intelligent lithium battery management system and the flicking door patent, the data center's operation safety and reliability can be improved effectively.

Intelligent moving ring monitoring system



- The centralized moving ring monitoring system can realize the real-time monitoring of power distribution, environment and security and protection, and support the southbound interface integration and the northbound protocol information transmission.
- The diversified alarm processing function supports SMS, telephone, e-mail and sound-light alarm modes;
- The diversified interface supports the large-screen, web client-side and mobile phone APP display modes.

## UPS Products



High-frequency  
Single-phase UPS

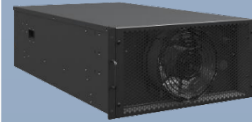


High-frequency 3-  
phase UPS



Power-frequency UPS

## Precision Air-conditioning Products



Rack-mounted  
Cooling Solution



Medium and  
Large Data Center  
Cooling Solution



Small and  
Medium Data  
Center  
Customized  
Solution



Modular High-  
density Cooling  
Solution

## Storage Battery Products



FM Small Sealed Battery  
Series



FM Fixed Sealed Battery Series



FMH Sealed Battery  
Series



GFM Sealed Battery Series

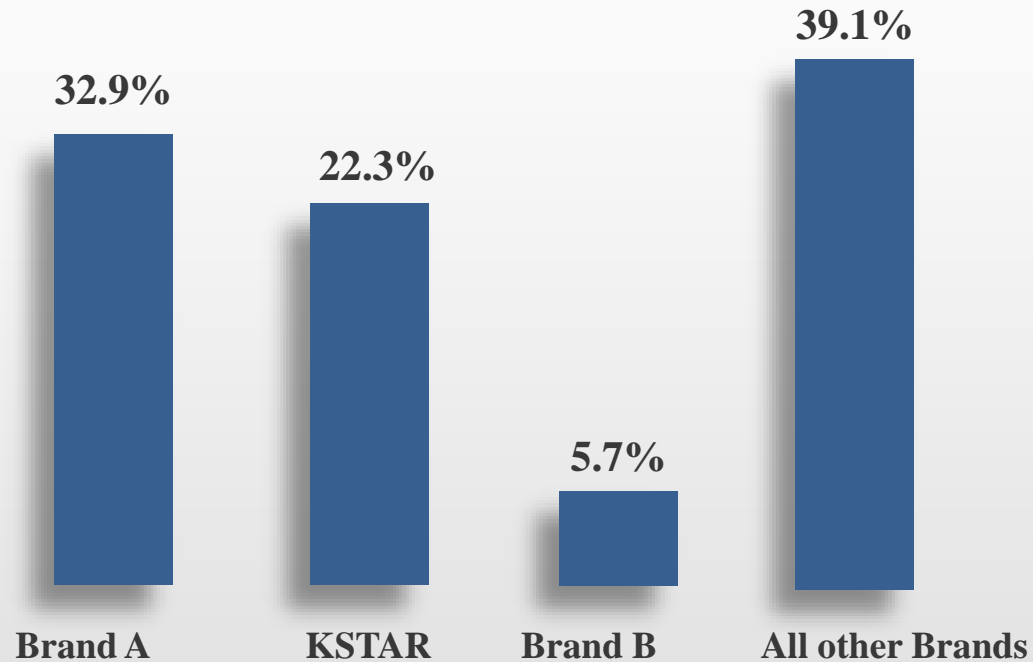


AGEL Sealed colloidal battery  
series



Lithium Battery

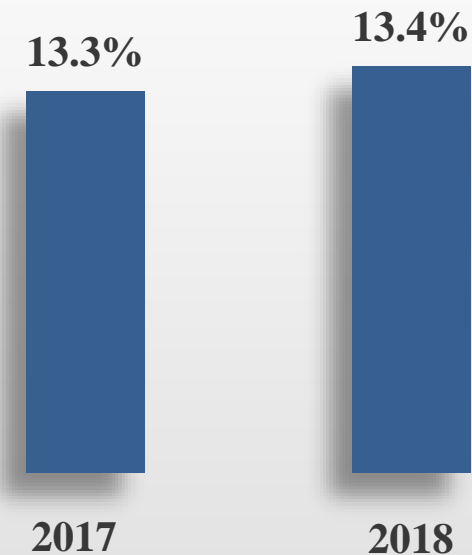
## Percentages of Sales of Main Brands in Chinese UPS Market in 2018



**From 2000, KSTAR has ranked first in the domestic UPS market among local brands.**

Data Source: CCID  
China UPS Product Market Annual Research Report

## KSTAR Shares in Chinese UPS Matching Storage Battery Market



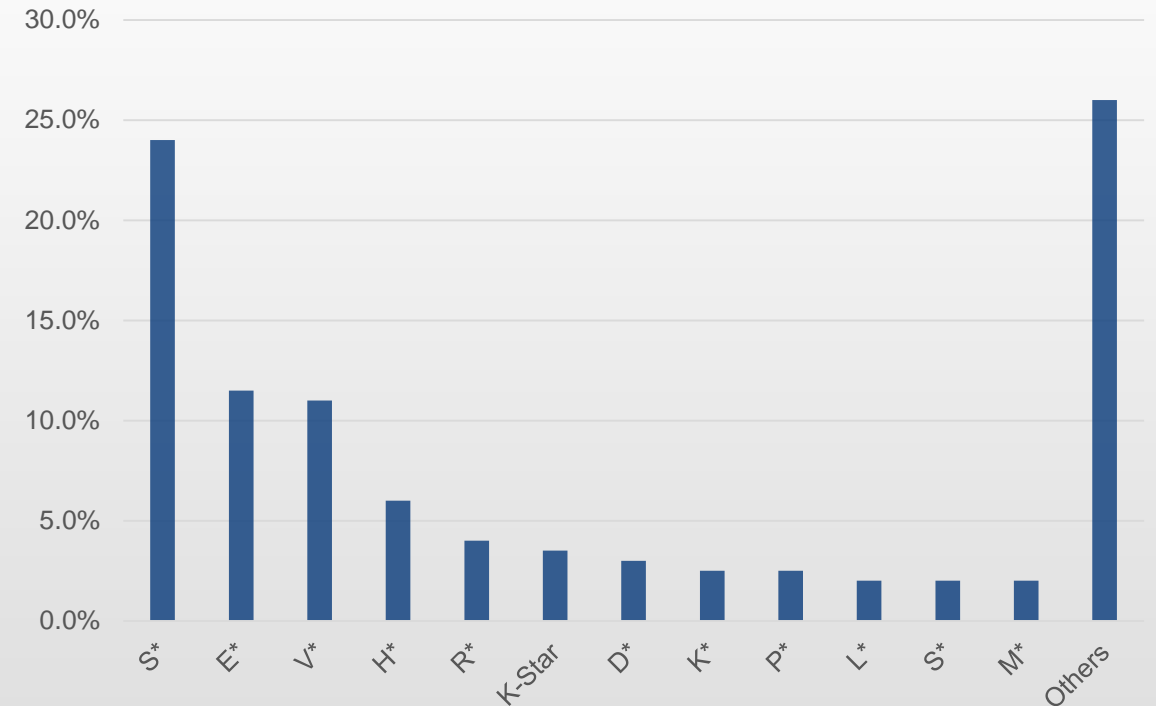
**In 2017 and 2018, KSTAR ranked first in the domestic UPS matching storage battery market among local brands..**

Data Source: ICT Research  
China UPS Matching Lead-acid Battery Product Market Report

Market share estimates - total UPS market				
Revenue (\$ million)				
	Company	2017	2018	Growth Rate
1	S*	24.0%	23.5%	-0.5%
2	E*	11.5%	11.5%	0.0%
3	V*	10.5%	11.0%	0.5%
4	H*	5.0%	6.0%	1.0%
5	R*	4.0%	4.0%	0.0%
6	K-Star	3.5%	3.5%	0.0%
7	D*	2.5%	3.0%	0.5%
8	K*	2.5%	2.5%	0.0%
=8	P*	2.5%	2.5%	0.0%
10	L*	2.5%	2.0%	-0.5%
=10	So*	2.0%	2.0%	0.0%
=10	M*	2.0%	2.0%	0.0%
	Others	27.5%	26.5%	-1.0%
<b>Market Revenue</b>		<b>7,735.3</b>	<b>8,209.9</b>	<b>6.1%</b>

Note: Market share estimates are rounded to the nearest half-percent.  
Source: IHS Markit, August 2019

## Market Shares in 2018



## Key Projects



## Financial Industry Group Purchase Shortlist (Partial)



## Government Enterprise/Public Security Organs Cases



## Communications Industry Group Purchase Shortlist



Gansu Purple Light Machine Room Construction Project

PSB Intelligent Lighting Project

## Power/Energy Industry



## Education/Medical Cases



## Transportation Industry



Machine Room of Nanjing Normal University

Machine Room of Xuwen People's Hospital in Zhanjiang



**Household Series Inverter**



**Commercial Series Inverter**



**Centralized Inverter**



**Integrated PV Inverter Substation**



**Monitoring System in PV Power Station**

**Superior LCOE**

PLC can save the communication cable and construction costs;  
Support the aluminium alloy cables and save the initial input of AC cables;  
Support the double-faced components with above 1.3 times super-high compatibility ratio;

**Intelligent and Efficient**

The built-in integrated PID restoration function guarantees efficient power generation for 25 years;  
Intelligent IV scanning and remote fast failure point location for high-efficient operation and maintenance;  
Support the night SVG function and power grid dispatching, and guarantee the power station's stable operation.

**Safe and Reliable**

Safety fire protection design, DC Arc Discharge Detection and failure recording function;  
At IP66+C5 Protection Level, it adapts to various harsh using environments and largely improves the equipment service life;  
When SCR is low, it will run steadily without breakdown.

**Intelligent Monitoring Operation and Maintenance**



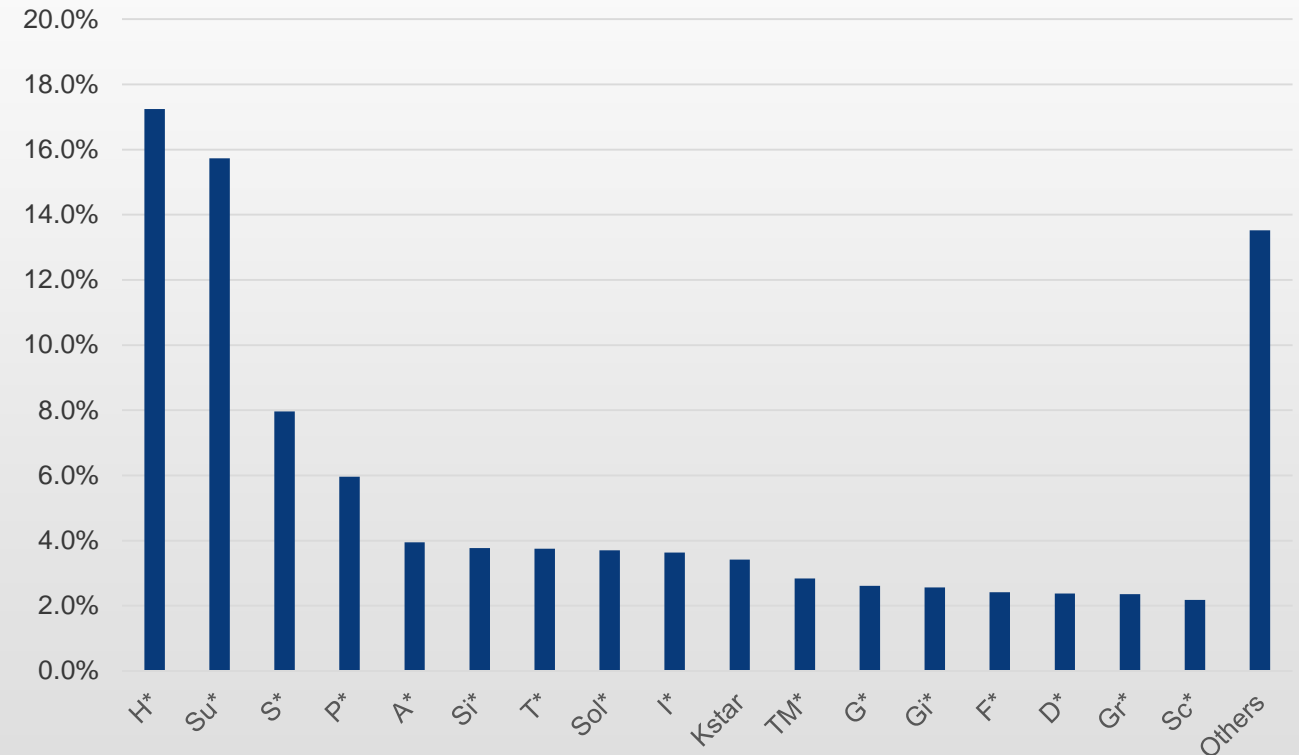
- Real-time monitoring, intelligent analysis, failure location, customer work order system; support Bluetooth+APP;
- Monitoring covering the entire power station with the integrated software and hardware and stable system;
- Data analysis and KBS save various costs.



World grid-connected PV inverter supplier market share estimates		
Unit: MW		
	Company	2018
1	H*	17.2%
2	Su*	15.7%
3	S*	8.0%
4	P*	6.0%
5	A*	3.9%
6	Si*	3.8%
7	T*	3.7%
8	Sol*	3.7%
9	I*	3.6%
<b>10</b>	<b>KSTAR</b>	<b>3.4%</b>
11	TM*	2.8%
12	G*	2.6%
13	Gi*	2.6%
14	F*	2.4%
15	D*	2.4%
16	Gr*	2.4%
17	Sc*	2.2%
	Others	13.7%
<b>Total MW Shipped</b>		<b>106,203</b>

Source: IHS Markit

Shares in 2018



## Household Power Station Application Case



Household PV Application Project in Dongyang, Zhejiang



Household PV Application Project in Yizheng, Jiangsu



PV Poverty Alleviation Project in Tongshan County, Hubei



Household PV Application Project in Zhulu County, Hebei

## Distributed PV Power Station Application Case



SPIC Rooftop Power Station in Shouguang Logistics Park, Shandong



Rooftop of Honda Industrial Park in Guangzhou



SPIC Distributed Power Station in Zhejiang



Guangzhou Zhujiang College of Vocational Technology

## Large-scale Power Station (PPP and Bidding Project)



Ukraine 200MW Surface Power Station



Pakistan 900MW Surface Power Station



SPIC Heilongjiang 500MW Grid Parity



Zhejiang Shuqimeng 300MW Fishing Light Complementation



Household PV and Energy Storage Combined Inverter



Power Station-level Energy Storage Inverter



Container Energy Storage Integrated System



Energy storage medium pressure all-in-one machine



EMS Cloud Platform System

## Complete Plan

The product program covers comprehensive plans geared to the household PV and energy storage all-in-one machine, AGC frequency modulation, grid energy storage, new energy storage, multi-energy complementation storage, industrial and commercial distributed power station, micro-grid energy storage, medium-pressure all-in-one machine and power battery grading application etc..

## Intelligent and Efficient

Adjustable active and reactive power; PQ, VF, VSG, SVG and black-start function; optimization of system design and temperature control technology; low system loss and high conversion rate of electric energy.

## Safe and Reliable

Optimized charging and discharging plan to extend the battery' s service life; high- and low-voltage ride-through capability; advanced active islanding protection technology; AC and DC dual APS redundancy design.

## Successful Cases



Liuqiao 1MW/2MWh PV, Energy Storage and Charging All-in-one Project (Xinchang, Jiangsu) has applied the GES series container-type AC bus product plan. It features low unit investment cost, high equipment integration, fast deployment, and high conversion rate of electric energy, integrates the PV, energy storage and charging station in a safe and steady operation status, and will promote the future development of distributed micro-grid.



AC Charging Pile



DC Integrated Pile



DC Split Pile



Charging Modules

## Rapid Deployment

All key components are self-researched and self-produced to guarantee consistency in the delivery period and realize the rapid deployment.

## Safe and Reliable

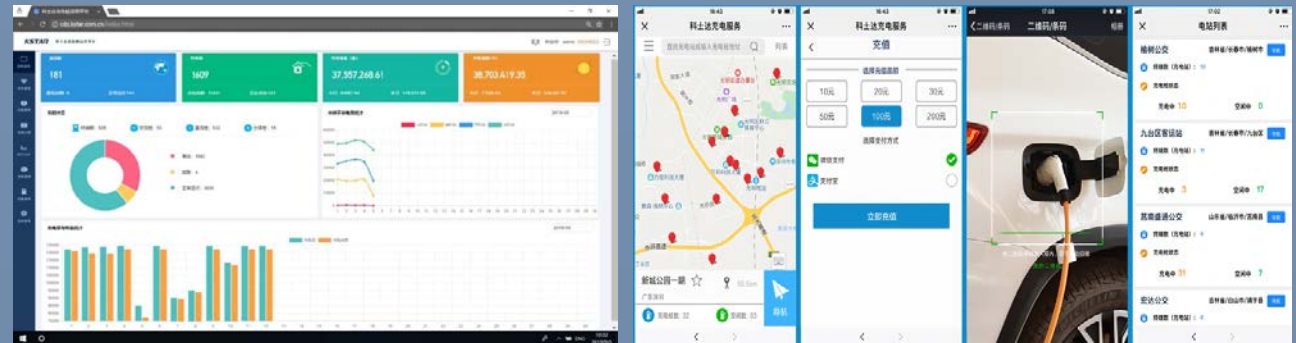
The metal plate is applied to strengthen the anti-crushing ability;  
IP54 satisfies the outdoor operating requirements;  
The scram protection design is to provide personal safety and equipment safety.

## Efficient and Energy-saving

Intelligent power distribution and simultaneous power input and energy-saving design are to reduce the standby power consumption and improve the equipment operating efficiency.

## KSTAR K Charging operating management platform

The "People, Vehicle and Pile" integrated service system platform with the charging service as the core is able to master and analyze the operation situation of each point through analyzing a variety of data.



## Public Transportation

Zhongshan Public Transportation



Quanzhou Public Transportation



## Public Parking

Fujian Investment Public Charging Pile



Ningde Communications Investment Public Charging Station



## Freight Logistics

Suning Logistics Park



SF Logistics Park



## Transportation Junction

Lanzhou Airport

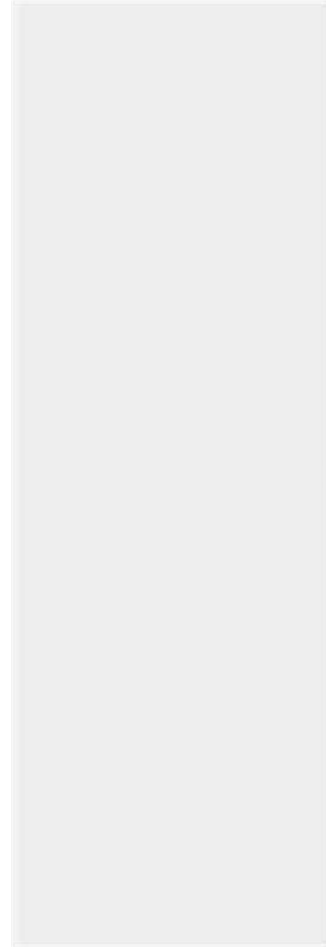


Qinzhou Expressway Service Area



# Corporate Strategy

03



### Technical Innovation



Focus on the intelligent energy field

- ◆ UPS
- ◆ Precision Air Conditioner
- ◆ Battery
- ◆ Micromodule
- ◆ PV
- ◆ Energy Storage
- ◆ Charging Pile

### Industrial Cooperation



Provide the users with the cutting-edge solutions

- ◆ Cooperate with various partners to jointly promote the solution innovation.
- ◆ Provide the leading customized solutions and services to various users from all walks of life.

### Establish the Technical Innovation Ecosystem



Establish the new ecosystem for enterprise technology

- ◆ Oriented to 5G, Cloud Data enter and New Energy Field as well as scientific and technological innovations, it will develop competitive products on the market and satisfy the customers' demand.
- ◆ Promote the technological development in this industry and make more contribution to the digitalization process of various fields.

### Guarantee the global informationization



- Provide the users with UPS Guarantee.
- Provide the users with the green and clean energy support.

### Satisfy the Smart Life



- More convenient methods of transportation
- More intelligent device management
- Safer energy guarantee
- More Efficient Resources Utilization

- Provide green product and service
- Reduce the carbon emission and promote recycling of resources'
- Propel the development of the green economy.



### Enhance the Green Initiative

- Care about employees
- Social Welfare
- Compliance Management
- Promote employment



### Undertake social responsibilities

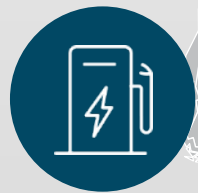




Data Center



New Energy  
PV



EV Charging Piles



KSTAR

客户为本 匠心为质

Customer-focused Quality-oriented

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