EFFICIENT ENERGY STORAGE

THE LEADER OF FULL TEMPERATURE ADAPTABILITY - HIGH C-RATE CELLS

FOCUS ON BATTERY TECHNOLOGY INNOVATION
CREATE ZERO-CARBON FUTURE TOGETHER

陕西坝刻能源科技有限公司
Shaanxi Qinkual Energy Technology Co.,Ltd.

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QINKUAL 坝刻®

DEVELOP EFFICIENT ENERGY STORAGE WITH
TECHNOLOGICAL INNOVATION

FIRST-CLASS ENERGY STORAGE BATTERY
PRODUCT SOLUTIONS

QINKUAL BATTERY


QUICK
High power delivers ultimate speed
QING
Heartfelt service connects all
QUALITY
Premium quality safeguards trust
KING
Relentless innovation leads the way

01

ABOUT QINKUAL

Industry leading high C-rate battery annual capacity 4GWH

National TOP 3 dispatch volume of high C-rate battery

COMPANY PROFILE

Shaanxi Qinkual Energy Technology Co, Ltd. is a technology company belongs to the larges-cale state-owned energy and chemical group Shaanxi Coal & Chemical Industry Group, focusing on energy storage and application.

QinKual Energy focuses on power-requiring application scenarios in fields such as new infrastructure, electricity, and transportation. Leveraging over a decade of profound technical accumulation, Qinkual Energy has established a comprehensive chain of research, development, manufacturing, and system solutions for " FULL TEMPERATURE ADAPTABILITY-HIGH C-RATE" lithium batteries.

陕西煤业化工集团有限责任公司
SHAANXI COAL AND CHEMICAL INDUSTRY GROUP CO.,LTD.

Shaanxi Coal and Chemical Industry Group Co., Ltd. (SHCCIG) is a ultra-large Energy & Chemical group in Shaanxi Province involving coal, coal chemical industry, iron & steel, electric power, equipment, logistics, technology, finance & construction.

500 FORTUNE GLOBAL 500 COMPANIES

752 Billion Total assets

501 Billion Operating income(2025)

178 TOP 500 Fortune Global 500(2025)

陕西煤业化工技术研究院有限责任公司
SHAANXI COAL CHEMICAL INDUSTRY TECHNOLOGY RESEARCH INSTITUTE

4 Technology Institutes
Coal, Chemical industry, New energy, New materials, Engineering technology

3 Global Scientific Institutions
Xi'an research headquarter
Shanghai/Shenzhen branch

100+ Master/PhD Core R&D Personnel
800+ Member R&D team

18+ Billion Yuan Accumulated R&D Investment
Around 4 billion yuan investmen in new energy

02

PRODUCTS AND APPLICATIONS

AIDC High-rate Power Backup Cells

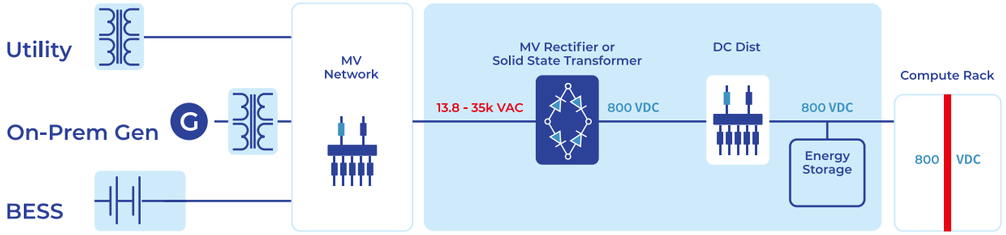
Pain points in scenarios

- Rapidly increasing total electricity consumption of data centers challenges the power supply of the power grid
- The GPU experiences instant load swings with particularly high peak loads, leading to an increased likelihood of equipment downtime
- The PUE requirements are becoming increasingly stringent, putting pressure on efficiency improvement and energy conservation
- Data centers demands an extremely high level of safety for the battery cells

The Leader Of Full-Temperature Adapatability-High Rate Cells

Applications of Qinkual Energy's cells in distributed energy storage in data center

800 VDC Distribution – MV to 800 VDC



BESS near the power grid
Stabilize the load swings of large-scale GPU clusters and provide UPS backup power.

Local ESS near GPU
Smoothing ms-level load swings of GPUs and provide short-time power backup.

Advantage of Qinkual Energy's cells

More flexible backup time

Available backup time within 3-30min provides rapid response and high overload ability.

Lower PUE cost

Effectively support more streamlined power supply and distribution architecture, and lower PUE cost by reducing components and heat loss.

More stable power grid

High power ESS can rapidly smooth grid load swings to make power supply more stable.

Lower investment cost

Fewer ESS and power backup systems are needed to support the power requirements of data centers and can reduce 20% power cost per unit.

AIDC High C-rate Cells

Product Performance

- **High safety** — pass nail penetration test
- **Long life span** — >95% capacity retention rate in 28 days float charge
- **High power** — achieve 2000W power higher than 30%SOC
- **<20℃ low temperature rise** — under 5C continuous discharge
- **2000+ cycles** — under 6C/6C(100% DoD)

Product Parameters

Type	QPF25GA	QPF40CB	QPF45CA
Dimension/mm	27 * 148 * 95	27 * 148 * 133	27 * 148 * 126
Weight/g	725±20	1085±20	1100±20
Nominal Capacity/Ah@1C	25	40	45
Backup Time/min	4	10	6
Nominal Voltage/V	3.2		
Maximum Charge/ Discharging Rate	Continuous 5C/15C	Continuous 6C/6C	Continuous 3C/10C
	Pulse 8C/20C	Pulse 8C/10C	Pulse 5C/12C
Standard Cycles	5000	4000	4000
High C-rate Cycles	3500(5C/5C)	2000(6C/6C)	1000(1C/10C)

IEC62619 · IEC62620 · 9540A · UL1973 · UN38.3 · GB/T 36276 · GB/T 31484

AIDC High C-rate Cells

Product Performance

- **High safety** — pass nail penetration test
- **Long life span** — >95% capacity retention rate in 28 days float charge
- **2000+ cycles** — under 6C/6C(100% DoD)
- **<15℃ low temperature rise** — under 5C continuous discharge

Product Parameters

Type	QPF50CC	QPF100CC
Dimension/mm	27 * 148 * 133	50 * 160 * 118
Weight/g	1120±20	2215±60
Nominal Capacity/Ah@1C	50	100
Backup Time/min	10	15
Nominal Voltage/V	3.2	
Maximum Charge/ Discharging Rate	Continuous 3C/6C	Continuous 2C/4C
	Pulse 4C/8C	Pulse 3C/6C
Standard Cycles	3000	4500
High C-rate Cycles	1000(3C/6C)	1500(2C/4C)

IEC62619 · UL1973 · 9540A · UN38.3 · GB/T 31484 · GB/T 31486

High-power energy storage cells

Pain points in scenarios

Increasing demands of power-requiring applications of power grid caused by high penetration rate of renewable energy, while there are relatively few corresponding products and solutions in the market

Fire and explosion accidents of energy storage power stations occur from time to time, requiring high safety of battery cells

High difficulty in thermal management caused by frequent high-power charging and discharging of the battery cells, leading to a rapid decline in cycle life

Application scenarios

Thermal power plant frequency regulation by energy storage

Lithium battery assisted frequency regulation can improve the responding accuracy and speed of thermal power units, enhancing the comprehensive performance to obtain higher profits.

Mining emergency power supply

Quickly responds to coal mine power supply when the power grid loses power, ensuring reliable and continuous operation of key loads, greatly protecting coal mine production safety and personnel life safety.

Renewable energy peak shaving

Stabilize the regional power grid load based on the load situation and reduce the use of high carbon footprint electricity.

Industrial and Commercial energy storage

Assist in peak valley arbitrage, power quality management, and reducing electricity costs in industrial parks, commercial applications, and other scenarios.

The Leader Of Full-Temperature Adapatability-High Rate Cells

High-power energy storage cells

Product Performance

Cycle performance
8000+ cycle life

Rate performance
314Ah battery cell supports 1.5P discharge

Appearance Features
Differentiated dimension with lower internal resistance

Product Parameters

Type	QPF314CA	QPF200CA
Dimension/mm	48 * 365 * 158	54 * 174 * 207
Weight/g	6250±300	4165±60
Nominal Capacity/Ah@1C	314	200
Nominal Voltage/V	3.2	3.2
Maximum Charge/ Discharging Rate	1P/1.5P	1C/2C
Standard Cycles	8000	4500

IEC62619 · 9540A · UL1973 · UN38.3 · GB/T 36276

Energy-type battery cells

Energy-type batteries are targeted at applications that do not require high power but are sensitive to cost, covering various LSEV for passenger and commercial scenarios. They help reduce energy consumption and achieve zero pollution and zero emissions.

PRODUCT Advantages

High safety
LFP system maintains higher safety

Low cost
Satisfies 3-5 years of use, with low replacement frequency, reducing total lifecycle costs

Excellent environmental adaptability
suitable for long-term use under various conventional outdoor conditions

High energy density
Light battery pack facilitates integration within limited spaces

Catering to fast charging
Supports 30-minute fast charging, reducing operating vehicle costs

Application scenarios

- LSEV
- Ship power supply
- Electricity for RV living
- Residential energy storage
- Communication station

The Leader Of Full-Temperature Adapatability-High Rate Cells

Energy-type battery cells

Product Performance

Product Parameters

Type	QPF52CA	QPF100CB
Dimension/mm	27 * 148 * 133	50 * 160 * 118
Weight/g	1100±30	2215±60
Nominal Capacity/Ah@1C	52	100
Nominal Voltage/V	3.2	
Maximum Charge/ Discharging Rate	Continuous1C/2C	
Maximum Pulse Charging/ Discharging Rate	3C/4C	2C/3C
Standard Cycles	2000（0.5C/0.5C）	3000（0.5C/0.5C）

IEC62619 · 9540A · UL1973 · UN38.3 · GB/T 36276

Low-temperature special application cell

Low-temperature special application cells are designed for regions with extremely low temperatures. They exhibit excellent high C-rate performance at low temperatures, ensuring power supply to equipment and facilities in cold regions and avoiding issues such as power shortages and shortened battery life.

PRODUCT Advantages

Excellent low-temperature performance

-60℃ extremely low operating temperature, -40℃ 10C high C-rate discharge, and can charge as low as -20℃, ensuring free use in low-temperature environments.

High safety

low temperature rise during high-rate discharge, no fire or explosion during nail penetration test

Strong power

Single cell power up to 1920W, effectively handling steep slopes, ice, snow, and other road conditions

Application scenarios

Startup power supply

Energy storage system in Alpine region

Low temperature Power in wellhead

The Leader Of Full-Temperature Adapatability-High Rate Cells

Low-temperature special application cell

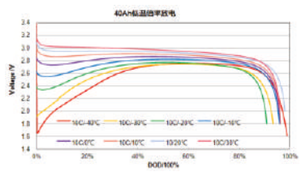
Product Performance

- -60℃ Discharge
- -20℃ Charge
- -40℃/10C Discharge at low temperature
- High safety pass nail penetration test

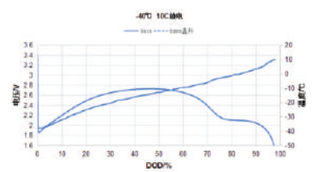
Product Parameters

Type	QPF20DA	QPF40DA
Dimension/mm	27 * 148 * 96	27 * 148 * 133
Nominal Voltage/capacity	3.2V/20Ah	3.2V/40Ah
AC Internal Resistance/mΩ	≤0.5	
Weight/g	725±20	990±20
Working Temperature/℃	-40~60	-50~55
Maximum Charging/ Discharging Rate /C	8C/30C	3C/10C
Maximum Pulse Charging/ Discharging Rate @50%SOC	10C/32C	5C/12C
Low Temperature Charging/C	-20℃/0.2C	
Low Temperature Discharging/C	10C,1.6V>98%@-40℃	1C,1.8V > 75%@-40℃
Standard Cycles	2000	2000
High C-rate Cycles	1200(8C/8C)	1500/(2C/2C)

GJB4477 GJB150.18A GJB2374A GB/T 31485



Low temperature discharge test



High-power discharge temperature rise test

03

TECHNOLOGY RESEARCH AND DEVELOPMENT AND SUPPORT

3 Major Technologies

100 Patents

20 Published SCI Articles

Covering 3D support of material, system, and products
More effectively promote technology innovation

MAJOR TECHNOLOGIES

Lithium ion high-speed shuttle conductive network

Maximum 30C performance

Full Temperature Range Electrochemical System

Traveling freely in -60~55℃ and remains more than 80% range in -40℃. Chargeable in -20℃.

Instant Current GuidingConstruction

Pioneering STACKING IN WINDING construction and DIRECT WELDING process ensure the dual objective of rate and efficiency of production.

TECHNOLOGY PLATFORMS

ULTRA Technology Platform

Process:full-tabs winding+stacking-in-winding
Rate range:2C-55C

QUEST Technology Platform

Process:large-capacity stacking
Rate range:0.5C-1.5C

Ultra-High Rate Lithium-Ion Capacitor Technology Platform

Process:full-tabs winding Rate range: > 55C

Sharpening craftsmanship

Deeply customized machines and advancing processes
increasing more than 10% energy density More than 96% cell efficiency

Excellent quality control

Full coverage quality control

11,000+ quality control points
90% online monitoring proportion

High products consistency and reliability

Tolerance <1%, voltage difference <5mV

Full-line semiconductor-grade environmental monitoring architecture

Core regional environment is higher than Class 100,000 cleanliness standard

Highly automated and digitized

90% Overall automation rate full-chain digital management bidirectional traceability of product information

CELL RESEARCH CENTER & ANALYSIS AND TESTING CENTER

Focusing on the field of "wide temperature range — high C-rate", the two centers comprehensively carry out cutting-edge battery technology, materials & electrochemical systems, product R&D and iterative optimization, process Know-How, and simulation and testing technology research. They are also equipped with professional trial production center and functional laboratories, which supports QINKUAL brand to create industryleading technologies and products.

Laboratory

- Electrolyte Development Lab
- Material Evaluation Lab
- Cell & System Thermal Simulation Platform
- New Product Pilot Line
- Material Pilot Test

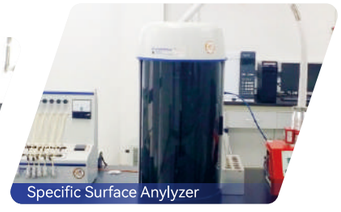
Equipment investment

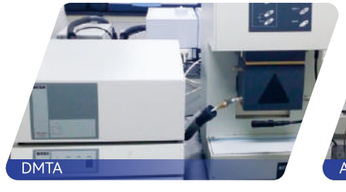
60 Million

Area

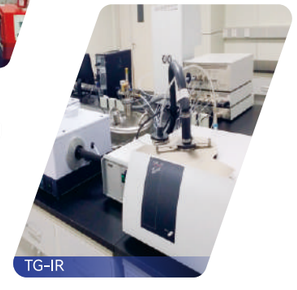
3000 m²


Gas Chromatography


Specific Surface Anylyzer


DMTA


Automatic Chemical Adsorption


TG-IR

CERTIFICATION


Class II Qualification for General Contracting of Electric Power Engineering Construction

License for installation (repair, testing) of electric power facilities


Environmental Management System Certification


Certification of Occupational Health and Safety Management System


Quality Management System Certification


CNAS Laboratory Accreditation Certificate


IEC62619


IEC62620

IATF16949

04

APPLICATION CASES

AIDC Terminal Case

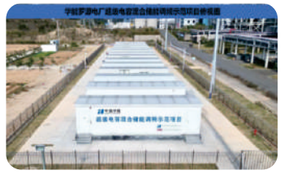
UPS backup power systems are used in industries such as semiconductors, data centers, and industrial manufacturing, and are exported to end-user applications in Dubai, the UAE, Russia, Ethiopia, and other regions




High-power energy storage applications

Local Rooted, Global Expanding, Leading High Power Energy Storage Trend

THERMAL POWER PLANT FREQUENCY REGULATION



Huaneng World's First Super Capacitor Combined FM Project

15MW / 7.5MWh DC side + 5MW super capacitor

Xinyuan Clean Energy: Northwestern's First Sodium-ion Battery Combined FM Project

10MW / 5MWh Lithium battery system + 1MW / 0.5MWh sodium-ion battery system

Tongchuan Power Plant: Shaanxi's First Super Capacitor Combined FM Project

15MW / 15MWh Lithium battery system + 5MWsuper capacitor

Shaanxi's first high power LFP battery +flywheel combined FM project

10MW/7.28MWh

The Leader Of Full-Temperature Adapatability-High Rate Cells

PEAK SHAVING

Wuhe Green Energy base: PV+ES Project

40.5MW/81MWh

Yuncheng Power Plant: Peak Shaving Project

120MW/240MWh

Xinyuan Clean Energy Carbide(CaC2) Factory: Peak Shaving Project

50MW/100MWh

INDUSTRIAL & COMMERCIAL ENERGY STORAGE

Taiwan Zero-Carbon Industrial Park: Region's First on/off grid switching ES Project

0.5MW/1MWh

Shenmu Sewage Treatment Plant: Northern Shaanxi's First User Side Benchmark ES Project

1500kW/3132kWh

THE LEADER OF FULL TEMPERATURE ADAPTABILITY - HIGH C-RATE CELLS

In the future, QINKUAL will continue to take technological innovation as driving force, and join hands with global customers to embark a zerocarbon society, guiding the world towards a green future.

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