Jena Flow Batteries GmbH

Corporate brochure 2026

Innovative solution provider
for stationary energy storage
and AEM electrolysers

Flow Batteries
for Long Duration Energy Storage

www.jenaflowbatteries.de

A new chapter in energy storage technology begins

We focus on innovations in
Iron-Chromium Redox Flow Batteries
and AEM Electrolysis Systems

Preface

We are proud to introduce Jena Flow Batteries GmbH as a provider of advanced technologies for energy storage using flow batteries and hydrogen generation through water electrolysis. With a strong background in metal-free flow batteries, our company builds on many years of experience in stationary energy storage and continues to advance solutions for a reliable, safe and sustainable energy future. As part of the Suqian Time Energy Storage group, we benefit from extensive industrial manufacturing capabilities, gigafactory-scale production capacities and deep expertise across the full value chain of flow battery technologies. In 2026, we are taking the next important step by expanding our portfolio with Iron-Chromium Flow Battery (ICRFB) systems. This proven and scalable technology enables long-duration energy storage from 6 to 24 hours and combines safe aqueous electrolytes, long service life, low fire risk and competitive lifecycle economics. It reflects our belief that different applications require different solutions and that energy storage systems should be tailored to the specific needs of each project.

In parallel, we are entering the field of green hydrogen generation by developing innovative and cost-efficient AEM electrolyzer systems. Together with our sister company, GHT Green Hydrogen Technologies Co., Ltd., we now offer innovative and cost-efficient AEM electrolysis systems for green hydrogen production. Responsibility and sustainable development are at the core of our philosophy and guide our corporate mission. Our technologies stand for quality, reliability, and long-term partnership, supporting industry and society in building a resilient and future-oriented energy infrastructure. Following successful projects and deployments in China and other international markets, we are now bringing our innovative energy storage and hydrogen solutions to Germany and across Europe.

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Jena Flow Batteries GmbH

Suqian Time Energy Storage Technology Co., Ltd.

Supporting the European energy transition by sustainable, scalable, and economical storage solutions for a green future

Our vision

Europe is on a mission to create a sustainable, resource-conserving energy system for future generations, strongly backed by the EU's climate protection laws. Yet, the expansion of regional and national power grids is progressing more slowly than necessary. Grid operators, the energy industry, and industrial sectors are increasingly seeking sustainable and efficient solutions to bridge the gap between renewable energy input and the required grid infrastructure. With the growing share of renewables in electricity production, fluctuations due to weather, seasons, and daily cycles are becoming more pronounced. To seize this momentum, the energy transition requires innovative solutions now more than ever.

Our energy storage systems are the key to synchronizing electricity generation and consumption. The timing is perfect: while industry is looking for answers, we offer one of the most sustainable and scalable large-scale storage solutions.

At Jena Flow Batteries, we are leading the way in sustainable storage of green electricity. In partnership with Suqian Time Energy Storage from China, we bring our advanced flow battery technologies to the European market. Our technology will have widespread applications in renewable energy, grid stabilization, and industrial processes.

Through close collaboration with Suqian Time Energy Storage and other strategic partners, Jena Flow Batteries is dedicated to driving the energy transition forward and providing reliable solutions for your energy challenges. Together, we can power a greener future.

Technology Overview

Redox flow batteries are advanced electrochemical energy storage devices that store electrical energy through electron exchange, similar to traditional batteries. A scalable system of tanks and electrochemical cells allows for the independent scaling of power and capacity, offering flexible and customized energy storage solutions for diverse applications. Redox flow is short for:

Reduction → electrons are bound

Oxidation → electrons are released

Flow → liquid storage medium

1.

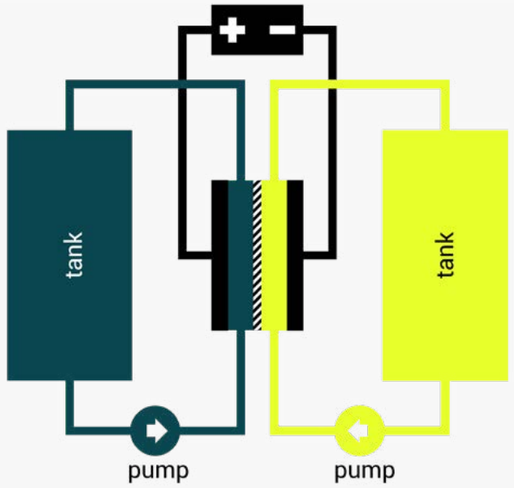
Two tanks hold a saline solution, each containing different storage materials, which function as the anode and cathode.

2.

Charging and discharging are achieved by pumping the saline solution through a cell.

3.

Through this process, electrons are bound and released – electricity is stored.



How our systems work

Built on a flexible platform architecture, our flow battery systems can be adapted to different active materials and application profiles. The tanks are filled with aqueous electrolyte solutions based on iron and chromium salts for IC-RFB systems, vanadium salts for V-RFB systems or metal-free organic materials for O-RFB systems. This flexible approach allows each system to be precisely configured to specific application requirements.

ICRFB systems particularly benefit from the use of highly available raw materials such as iron, which is globally abundant, cost-efficient, and geopolitically stable. This creates a strong foundation for scalable and resilient long-duration energy storage solutions.

Technology in comparison

Companies around the world are dedicated to innovating and advancing battery technologies. Flow batteries are being developed by various groups across Europe, Asia, and the USA. Jena Flow Batteries, together with our parent company Suqian Time in China, is proud to be at the forefront of this revolution.

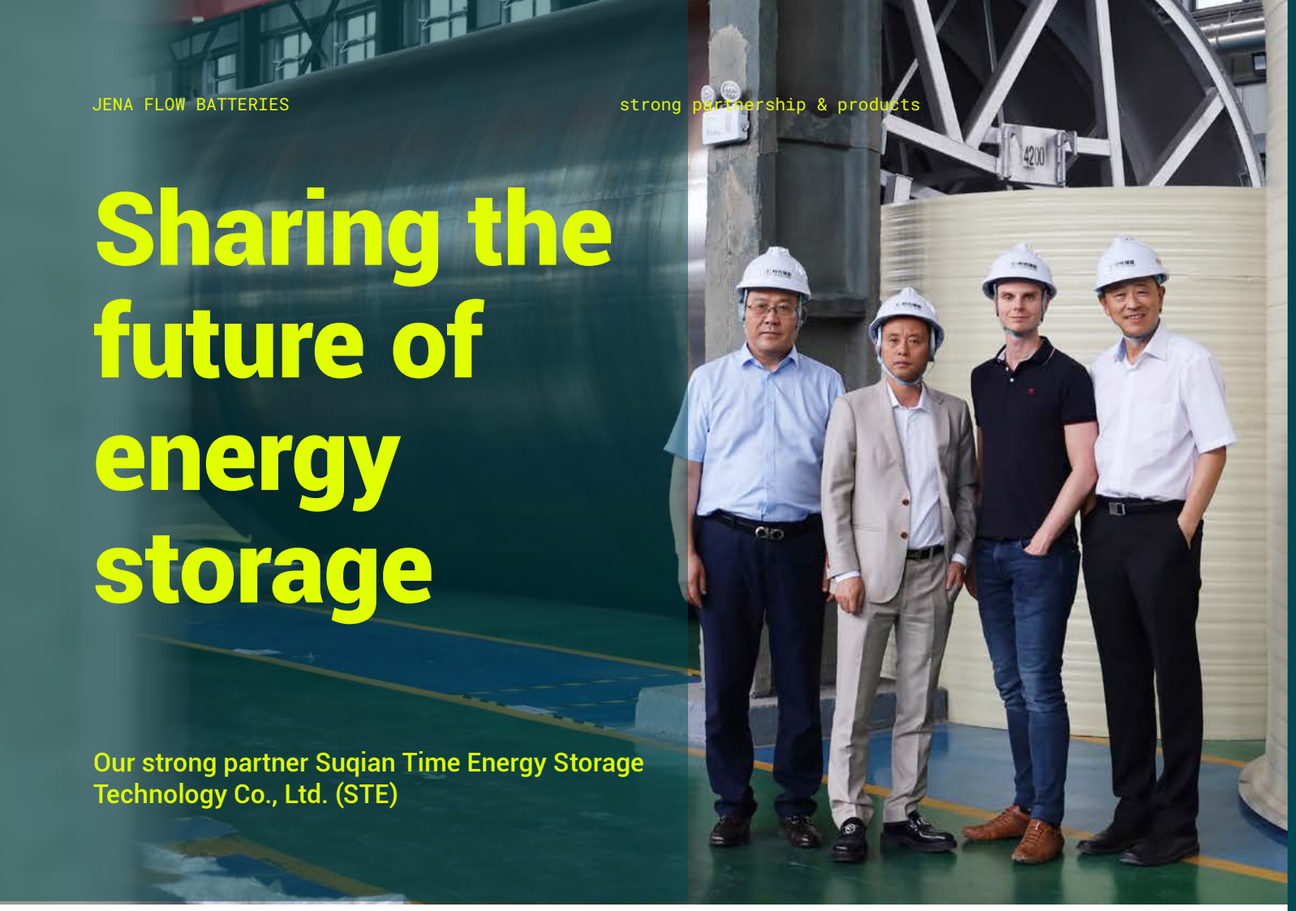
	Lead-acid battery	Lithium-ion battery	Flow battery
Availability of raw materials	✕	−	↗
No thermal runaway	↗	−	↗
Fire safety	↗	−	↗
Easy maintenance	−	↗	↗
Scalability	−	✕	↗
Longevity	−	✕	↗
Stationary application	✕	✕	↗
Mobile application	−	↗	−
Low cost over lifetime	−	✕	↗
Long duration storage	−	✕	↗

Environmental benefits of flow batteries

Flow battery systems provide numerous environmental and socio-economic advantages, supporting the transition towards a green energy future.

- **Sustainable lifecycle:** Long-lasting, recyclable electrolytes endure thousands of charge cycles to significantly reduce waste and minimize the environmental impact.
- **Renewable integration:** Efficient management of wind and solar energy provides reliable baseload electricity and enhances grid resilience.
- **Emission reduction:** Paired with photovoltaic plants, flow batteries can reduce greenhouse gas emissions by up to 98% compared to conventional coal-fired power plants.
- **Versatile applications:** Scalable and flexible, ideal for large-scale grid storage and remote energy supply.

Sharing the future of energy storage



Our strong partner Suqian Time Energy Storage Technology Co., Ltd. (STE)

Suqian Time Energy Storage Technology Co., Ltd. (STE) was established in 2021 and specializes in the research and development, manufacturing, and sales of flow batteries. Since its founding, Suqian Time has developed a water-based, metal-free flow battery system and several key components of flow batteries. Working both independently and in collaboration with leading universities and research institutes worldwide, Suqian Time continues to push the boundaries of energy storage technology. The company has been granted several patents for core technologies related to metal-free flow batteries, laying a solid foundation for future development. In 2023, Suqian Time acquired the German-based JenaBatteries GmbH, merging their expertise in metal-free flow battery systems. This strategic partnership leverages synergies and enhances innovation, offering top-tier energy storage solutions. Both companies are committed to providing safe and highly efficient systems to ensure the rapid development of renewable energy, offering robust support for the construction of smart grids, and making a significant contribution to regional development and carbon neutrality. Over the past years, Suqian Time has developed extensive manufacturing capabilities for organic electrolytes, bipolar plates, graphite felts, membranes and stacks. With the establishment of a gigawatt-hour-scale flow battery production line, the company has created a strong industrial foundation for the large-scale deployment of redox flow battery systems.

In 2026, Suqian Time expanded its technology portfolio with the launch of Iron-Chromium Flow Battery systems. The development builds on a strong foundation with decades of technical validation, renewed through modern system engineering and industrial-scale manufacturing capabilities. By bringing this proven battery principle back into practical large-scale application, Suqian Time adds a robust and cost-effective solution for long-duration energy storage.

Product overview

Our product range includes battery components and models specifically designed for many market segments. From containerized battery systems to utility-scale energy storage facilities, we offer scalable solutions in a wide range of sizes and configurations.

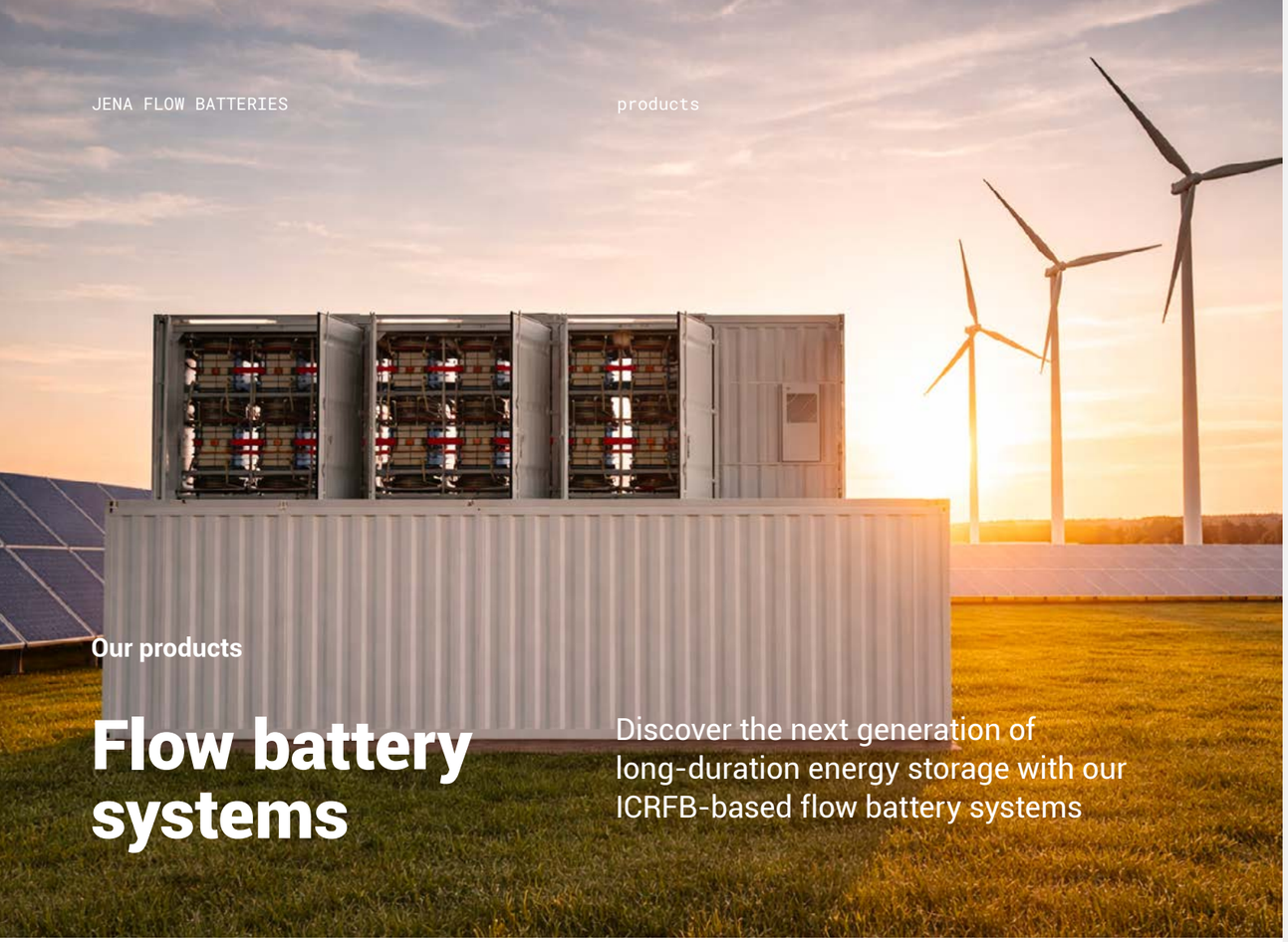
Flexibility: Our battery models are available in different sizes and can be customized to meet your specific requirements.

Scalability: From small containers to large energy storage facilities, our battery models provide a scalable solution for every application.

Efficiency: Thanks to our innovative technology, our battery models offer high efficiency and performance.

Customer-specific customizations: We offer you the opportunity to commission specific requirements and customizations. Through close collaboration, individual solutions tailored to your needs can be developed.

Discover the future of energy storage with Jena Flow Batteries GmbH and contact us today for more information!



Our products

Flow battery systems

Discover the next generation of long-duration energy storage with our ICRFB-based flow battery systems

Our iron-chromium flow battery (ICRFB) systems set a new benchmark for safe, durable, and cost-efficient long-duration energy storage. Designed for storage durations from 6 to 24 hours, they combine proven electrochemistry with modern system engineering to deliver reliable performance across a wide range of applications.

With an aqueous electrolyte, our systems offer an intrinsically safe, non-flammable solution, well suited for operation in demanding environments and hot climates. At the same time, the use of abundant raw materials such as iron enables stable supply chains and attractive lifecycle economics, resulting in a low Levelized Cost of Storage (LCOS).

The modular system architecture allows for flexible deployment starting from 600 kWh. By decoupling power and energy, capacity can be scaled efficiently through expandable electrolyte storage tanks reaching multi-MWh and beyond. Each system is engineered to meet project-specific requirements. From renewable energy integration and grid stabilization to industrial energy management and data centers, our flow battery platform ensures high operational safety, long service life, and reliable performance.

To further support our clients' needs, we offer OEM parts manufacturing and customized system components tailored to specific project requirements. Partner with us to deploy safer, smarter, and more sustainable energy infrastructure solutions.

→ **Contact our team today to learn how our innovative products can enhance your flow battery systems.**

Iron–Chromium Flow Battery

Iron-chromium redox flow batteries are a proven, scalable solution for long-duration energy storage, with typical storage durations ranging from 6 to 24 hours. By using widely available raw materials such as iron and chromium, they combine low lifecycle costs with secure and resilient supply chains. The aqueous electrolyte is intrinsically safe and non-flammable, while the durable system concept enables reliable performance and long service life. Thanks to the specific characteristics of the electrolyte, the systems are also well suited for deployment in hot climates.

Vanadium Flow Battery

Our standard vanadium module is designed for high scalability, with a typical configuration of 100 kW / 500 kWh (5-hour duration). Multiple modules can be seamlessly combined to achieve storage capacities of several MWh. For larger applications, we offer custom-engineered battery systems with extended storage durations, tailored to specific project requirements.

Organic Flow Battery

The organic, metal-free flow battery system is built around a standard 250 kW / 1 MWh module, providing a 4-hour storage duration. The modular design enables several units to be combined into larger storage systems with capacities of several MWh. Special configurations are available for frequency regulation applications, where fast response and precise power control are required.

OEM components

Graphite felts

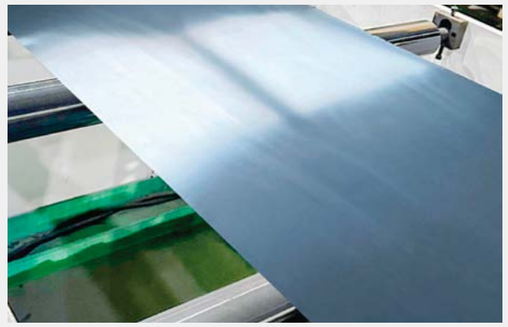
High-performance electrode material engineered to support efficient charge transfer, reliable operation and long service life for flow battery systems.

Specifically designed for flow battery applications, our graphite felt combines high electrical conductivity with strong chemical stability in demanding electrolyte environments. It is easy to handle, cost-effective and available in a range of customizable thickness options to match different stack designs and performance requirements.

Bipolar plates

Discover our independently developed bipolar plates, designed with low electrical resistance, high strength, and excellent flexibility.

Our state-of-the-art bipolar plates are perfect for various industrial applications, combining durability with cost-efficiency. With an annual production capacity of 1,000,000 square meters, we are equipped to meet large-scale demands while maintaining high quality.



Flow battery stacks

Our battery stack design is engineered for optimal performance and efficiency.

Featuring high electrolyte utilization, an optimized double-layer plate structure, excellent electrolyte flow characteristics, and high energy density, our stacks ensure efficiency and reliability in your flow battery application. With a rapidly increasing annual production capacity of 500 MW, our stacks are designed to meet large-scale demands while maintaining exceptional quality. Additionally, we offer OEM solutions, allowing you to choose components that fit your needs best.

AEM electrolysis solutions

AEM electrolysis – efficient, scalable, and integrated into one energy system

With our AEM (Anion Exchange Membrane) electrolysis systems, we expand our portfolio beyond energy storage to enable efficient green hydrogen production that can even be combined with flow batteries as part of one integrated energy system

AEM technology combines the advantages of alkaline and PEM electrolysis while avoiding costly precious metals. It enables immediate start-up, dynamic operation, and high efficiency, making it ideally suited for fluctuating renewable energy sources such as wind and solar. The systems deliver high-purity hydrogen (>99.8%) and are designed for reliable, industrial-scale applications. As a solution and platform provider, we connect energy storage and hydrogen production—from electricity to hydrogen and back. In close collaboration with our partner Green Hydrogen Technology (GHT), we integrate expertise across the full value chain, from core components to complete electrolyzer systems.

Our goal is clear: to deliver scalable, cost-efficient, and future-proof solutions that support the transition to a resilient and sustainable energy infrastructure.

→ **Contact our team today to learn how our innovative AEM electrolyzer solutions can support your green hydrogen projects.**

TIME ENERGY STORAGE

Making Energy Storage Safe and Efficient

Suqian Time Energy Storage is an innovative company in the field of stationary electricity storage systems.

www.energydefender.cn

Company profile

Suqian Time Energy Storage Technology Co., Ltd.

More than 70 R&D personnel

8,000 m² research and development building

Suqian Time Energy Storage is a leading developer and manufacturer of advanced flow battery systems. With expertise across multiple redox flow battery technologies, the company covers the full value chain from active materials and key components to fully integrated battery systems. This enables Suqian Time to provide scalable, industrial-grade energy storage solutions for demanding long-duration applications.

Since its establishment, Suqian Time Energy Storage has worked closely with leading research institutions, including the University of Science and Technology of China, Xi'an Jiaotong University, the Chinese Academy of Sciences and Changzhou University. These collaborations have supported the development of flow battery systems, key materials, and core components. The company has overcome key technical challenges in areas such as material preparation, stack scale-up, and battery system integration, while building strong technological capabilities in aqueous organic flow batteries and iron-chromium systems. Suqian Time Energy Storage has also established China's first large-width anion exchange membrane production line, further strengthening its position across the flow battery and electrolysis value chain. With more than 200 patent applications and selected technologies supported by China's National Key Research and Development Program, the company combines research-driven innovation with industrial manufacturing capabilities. It is committed to providing safe and efficient energy storage for the rapid development of the new energy industry, providing strong support for the construction of smart grids, and contributing to the Chinese „carbon peak and carbon neutrality" strategy.

Business segments

Headquarters:
Suqian, Jiangsu, China

Production Bases:
Suqian, Jiangsu
Shenyang, Liaoning

R&D Center:
Suqian, China
Jena, Germany
Joint Laboratory with the Guangdong Research Institute

Branch offices:
Suqian, China
Jena, Germany
Beijing, China
Guangzhou, China

Key Materials:
Zhonghe Times, Suqian
Shandong Qixing Times, Dezhou

Key milestones

- **2021 June** — STE established
- **2021 Nov.** — Construction of the Suqian Production Base Commenced
- **2022 Aug.** — 20 kW Stack Passed Testing and Qualification
- **2023 March** — Delivery of the First Kilowatt-Scale Energy Storage Product
- **2023 Sept.** — Series A Financing Led by Hillhouse Capital
- **2023 Oct.** — Delivery of the First Megawatt-Scale Project
- **2023 Nov.** — Asset acquisition of JenaBatteries GmbH
- **2024 April** — Delivery of the First Overseas Megawatt-Scale Project
- **2024 Dec.** — Series A+ Financing Led by Beijing Green Energy
- **2025 June** — First 20 MWh Grid-Side Project Successfully Connected to the Grid

Operation excellence

Over 200 Patents
We hold more than 200 patents, showcasing our commitment to innovation and excellence.

ISO9001 Certified
We obtained ISO9001 certification for our quality management system, which ensures the highest standards in our operations.

CGC Approved
Our products have successfully passed CGC testing, reflecting our dedication to superior product quality and safety.

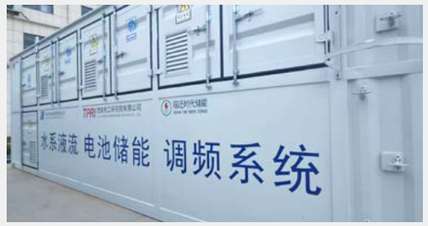
Award-Winning
We have been honored with over 10 industry awards, recognizing our outstanding contributions and leadership in the field.

Project Cases

200 kW / 400 kWh
Frequency regulation project in Luoyuan, Fujian in December 2024
(Metal-Free Organic System)

5 MW / 20 MWh
Grid-side energy storage power station project in Ordos, Inner Mongolia in June 2025
(Metal-Free Organic System)

1.25 MW / 5 MWh
China Southern Power Grid Energy Storage Project at Guangzhou Validation Base in December 2025
(Metal-Free Organic System)



500 kW / 1000 kWh
Frequency regulation phase II project in Luoyuan, Fujian in 2026
(Metal-Free Organic System)

150 kW / 600 kWh
Project in South Africa in 2026
(Iron-Chromium)

200 kW / 1200 kWh
Jiangsu Jingtai Project in Suqian in December 2023
(All-vanadium System)

400 kW / 1600 kWh
Project in Singapore in March 2024
(All-vanadium System)

1.25 MW / 5 MWh
China Southern Power Grid Energy Storage Project in Guangzhou Validation Base in December 2025
(All-vanadium System)

500 kW / 500 kWh
Project in India in 2026
(All-vanadium System)

100 kW / 500 kWh
Project in Saudi Arabia in 2026
(All-vanadium System)

The applications

Flow batteries offer safety and long operational lifetimes, making them particularly well suited for long-duration energy storage (LDES) and highly versatile across diverse applications. They are ideal for everything from power generation and grid support to end-user energy solutions. Additionally, these batteries enhance the stability and economic efficiency of electricity supply and consumption. They are especially effective in supporting the development of new power systems and accelerating the integration of renewable energy sources.

Power-generation side application

Our batteries can significantly enhance the grid's capacity to integrate solar and wind power. They support peak shaving and frequency modulation, thereby improving the reliability and capability of the power supply. Additionally, the batteries can be integrated with fossil fuel power stations, enhancing their safety, economy, and overall stability.

Grid side application

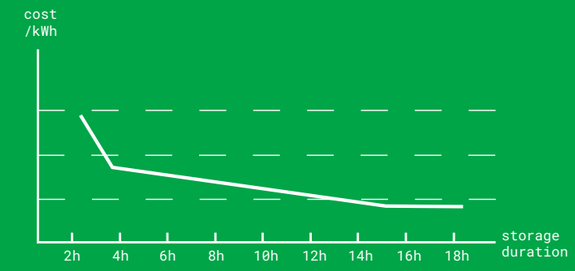
Our batteries can provide crucial services such as peak shaving by storing energy during low consumption periods and releasing it during peak demand. They enhance the reliability and security of power grid operations by balancing disparities in regional power grids. Additionally, our batteries provide a black-start capability, ensuring large-scale power systems can recover quickly and orderly after outages.

User side application

Our batteries help reduce electricity costs by storing energy during low-demand periods and utilizing it during peak times. They provide a reliable standby power supply for enterprises and data centers, ensuring uninterrupted operations. Additionally, users can establish a self-sufficient energy storage–power supply system by combining photovoltaic and wind power sources with flow batteries.

Use cases

Flow batteries for long-duration storage



Flow batteries are set to play a key role in advancing long-duration energy storage, helping to significantly increase renewable energy penetration by up to 50%. Systems like our iron-chromium (ICRFB) battery enable continuous energy storage for ten hours or more, reducing reliance on fossil fuels, stabilizing grid operations, and enhancing energy security. Long-duration energy storage is essential for balancing energy supply and demand, making flow batteries an ideal solution for a wide range of applications, from grid support to renewable integration.

150 kW / 600 kWh iron-chromium flow battery system
for long-duration energy storage (South Africa in 2026)

1. **Long lifetime**

   Flow batteries boast an impressive lifespan with no solid-state degradation, allowing them to achieve over 20,000 cycles. This long-lasting performance ensures reliability and cost-effectiveness, making them an ideal choice for sustainable energy solutions.

2. **Unmatched flexibility**

   Thanks to their modular design, flow batteries offer unparalleled scalability for diverse applications, from small-scale to multi-megawatt systems. This flexibility allows to provide cost-effective solutions, as shown in the curve.

3. **Superior safety**

   Flow batteries are engineered for absolute safety, with no risk of combustion throughout their entire lifecycle.

Metal-free flow batteries for frequency regulation

In power grids, balancing supply and demand is essential to control the grid frequency. Traditional methods, often dependent on slow-reacting fossil fuel plants, lack efficiency. Our metal-free flow batteries bring a transformative solution with their rapid response capabilities and superior efficiency. By quickly adjusting to shifts in supply and demand, they significantly enhance grid stability. Ideal for frequency regulation and gridforming, our metal-free flow batteries provide a cleaner, quicker, and more reliable alternative, promoting a sustainable energy future. With these innovative systems, grid operators can maintain a stable and efficient energy supply.

500 kW / 1,000 kWh aqueous organic flow battery system for frequency regulation, Phase II project in Luoyuan, Fujian, 2026

1. **Enhanced safety**
   Our flow batteries are engineered for maximum safety, eliminating the risk of combustion throughout their entire lifespan.

2. **Peak performance**
   Experience peak performance with the quick response of our metal-free flow batteries from zero to full power within milliseconds and providing reliable, consistent output for prolonged durations.

3. **Strategic energy management**
   Our metal-free flow batteries effectively utilize 30-70% state of charge (SOC) for optimal frequency regulation, while providing additional reserve capacity for supplementary business models.

Development plan

Adhering to innovation

Our development plan is rooted in innovation. We are dedicated to advancing next-generation flow battery systems by continuously enhancing performance, safety, and cost-efficiency. Our efforts include the development of advanced materials, such as third-generation anion-exchange membranes. We are committed to improving overall system efficiency while increasing the reliability and lifespan of our batteries, ensuring they meet the highest standards for energy storage solutions. Our Suqian R&D Center supports these efforts with an 8,000-square-meter facility and a team of more than 70 R&D specialists.

Trustworthy

Practical

Innovative

Win-Win

Green

Focus on optimization and upgrade

We are committed to optimizing the performance and efficiency of our existing energy storage products to ensure they remain market leaders. Our goal is to continuously improve efficiency and develop more energy-dense technologies such as multi-electron aqueous organic flow batteries with energy densities above 50 Wh/L — three to five times higher than conventional flow battery systems. Through ongoing advancements, we aim to deliver cutting-edge solutions at competitive cost that support the energy transition and meet the evolving needs of the industry.

International expansion

We are continuously enhancing our manufacturing capabilities to meet growing global demand for long-duration energy storage. Our production capacity is designed to reach up to 5 GWh, with further expansion planned in line with market development and customer requirements. To support market access and customer proximity, five regional companies have been established in China. Each region is supported by dedicated regional management to ensure responsive project development, sales support, and customer service. Internationally, Suqian Time Energy Storage is expanding its presence together with Jena Flow Batteries and selected partners in key markets including the United States, Africa, and Australia.

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