# China Flow Battery Market Forecast 2025-2032

Market Report | 2025-11-17 | 135 pages | Inkwood Research

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**Report description:**

KEY FINDINGS

The China flow battery market size is valued at $120.80 million as of 2025 and is expected to reach $440.82 million by 2032, progressing with a CAGR of 20.31% during the forecast years, 2025-2032.

China's flow battery market surges forward, driven by aggressive government mandates under the 14th Five-Year Plan targeting carbon neutrality by 2060. National energy storage deployment goals accelerate installations across renewable-heavy provinces like Xinjiang and Sichuan. Meanwhile, domestic vanadium supply chains provide cost advantages that international competitors struggle to match. State-owned utilities and grid operators increasingly favor flow batteries for long-duration storage applications exceeding four hours.

MARKET INSIGHTS

Additionally, provincial subsidies and preferential grid connection policies remove financial barriers for large-scale projects. The government's ban on certain lithium battery chemistries for grid storage due to safety concerns further propels flow battery adoption. Manufacturers benefit from economies of scale as production capacity expands rapidly, with planned investments exceeding CNY 33.7 billion in 2024 alone, according to industry reports.

Furthermore, reports reveal that nearly 30 projects of 100MWh scale or larger are registered or in planning stages nationwide, totaling over 4GW/18GWh capacity. Technological breakthroughs in stack design and electrolyte production reduce system costs by 30-40% compared to earlier generation systems. This combination of policy support, resource advantages, and technical innovation positions China as the global leader in flow battery deployment and manufacturing capacity through 2032.

China dominates global flow battery installations with landmark projects demonstrating commercial viability at unprecedented scales. The recently completed 200MW/1GWh vanadium redox flow battery system in Jimusar, Xinjiang, represents the world's largest operational project of its kind. Backed by China Huaneng Group, this CNY 3.8 billion facility pairs with a 1GW solar farm to provide five hours of continuous discharge capacity. Provincial governments in renewable-rich regions like Inner Mongolia and Hebei launch megawatt-scale demonstration projects that validate technical performance and economic models.

State Grid Corporation initiatives in these regions test flow batteries for grid stabilization, renewable integration, and peak demand management. Moreover, China's manufacturing ecosystem supports rapid scaling with companies like Dalian Rongke Power, Shanghai Electric Energy Storage, and Pu Neng establishing GWh-scale production facilities. Domestic vanadium producers, including Panzhihua Iron & Steel and Hebei Iron & Steel Group, vertically integrate into electrolyte manufacturing, securing raw material supply chains.

The Sichuan Provincial Government issued China's first vanadium battery industry-specific policy in May 2024, targeting 15-20% market penetration in the storage field by 2025. This policy framework includes joint investment incentives for renewable developers and battery manufacturers, plus preferential profit-sharing mechanisms through market-based approaches. Commercial procurement accelerates as major state-owned enterprises conduct GWh-scale tenders with increasingly competitive pricing below CNY 2.5 per Wh.

China holds nearly half of the world's grid-scale battery storage capacity, expanding from 7.8GW in 2022 to 27.1GW in 2024, according to recent data. Flow batteries capture growing market share within this expansion despite lithium-ion dominance. Xinjiang emerges as a focal point for 100MWh-scale flow battery projects driven by massive renewable energy bases requiring long-duration storage. The region aims to connect over 20GW of new energy storage to the grid by 2025 as part of becoming a national clean energy hub. Sichuan Province leverages its position as China's largest vanadium resource holder to build integrated supply chains from mining through battery manufacturing.

Key projects like the 300MW/1.8GWh storage project in Lijiang, Yunnan, and the 250MW/1GWh installation in Chabuchaer County, Xinjiang, demonstrate industrial-scale deployment capabilities. China Nuclear Power Corporation subsidiaries show particular interest in flow battery technology, organizing multiple GWh-scale procurement tenders since 2022. State Power Investment Corporation awarded contracts for 1GWh systems in September 2023, with Shanghai Electric and other domestic manufacturers winning bids.

Technical advancements from research institutions like the Dalian Institute of Chemical Physics push performance boundaries with 70kW-level stacks achieving 40% cost reductions compared to previous 30kW designs. Manufacturing investments target 48GWh annual production capacity by the end of 2024, supported by industrial parks in Baotou and Panzhihua specializing in all-vanadium flow battery production. Export strategies emerge as Chinese manufacturers eye Southeast Asian and African markets where grid infrastructure development creates demand for reliable long-duration storage solutions.

SEGMENTATION ANALYSIS

The China flow battery market is segmented into offering, battery type, material, ownership, storage, and application. The application segment is further classified into grid/utility, commercial and industrial, EV charging station, and other applications. Commercial and industrial applications gain substantial traction as businesses recognize flow batteries' value proposition for peak shaving and energy cost optimization. Manufacturing facilities across Guangdong, Jiangsu, and Zhejiang provinces deploy flow battery systems to manage peak demand charges that represent 30-40% of total electricity expenses. These installations charge during off-peak hours when rates drop, then discharge during expensive peak periods to reduce bills by 20-30% according to operator reports.

Industrial sites value the non-flammable water-based electrolytes that flow batteries use, addressing safety concerns that lithium-ion systems raise in facilities handling sensitive processes or storing valuable inventory. Chemical plants, pharmaceutical manufacturers, and electronics assembly operations consequently adopt vanadium redox systems with confidence. Business parks increasingly incorporate flow batteries into microgrid designs that integrate rooftop solar generation with long-duration storage. Textile manufacturers in Jiangsu Province exemplify this approach by capturing midday solar surplus in flow batteries, then discharging during evening production shifts when solar output drops but manufacturing continues.

Commercial buildings in Shanghai and Beijing deploy these systems to smooth morning and evening demand spikes that coincide with high occupancy periods. Shopping malls particularly benefit as they require uninterrupted power for refrigeration, lighting, and HVAC while seeking to minimize expensive peak rate exposure. Data centers represent emerging opportunities as these facilities demand absolute reliability alongside massive energy consumption. Flow batteries deliver dual value by providing backup power during outages while optimizing grid electricity costs through strategic charging patterns.

COMPETITIVE INSIGHTS

Some of the top players operating in the China flow battery market include Dalian Rongke Power Co Ltd, Shanghai Electric Energy Storage, Pu Neng (Prudent Energy), Great Power Energy & Technology Co Ltd, etc.

Shanghai Electric Energy Storage establishes itself as a leading domestic flow battery manufacturer focused exclusively on vanadium redox technology development and commercialization. The company operates as a specialized subsidiary of Shanghai Electric Group, one of China's largest industrial conglomerates with extensive experience in power generation equipment and energy infrastructure.

Shanghai Electric Energy Storage secured CNY 400 million in Series A financing during 2023, pushing post-investment valuation above CNY 2.2 billion and demonstrating strong investor confidence in the flow battery market potential. Headquarters in Shanghai positions the company strategically near major manufacturing hubs, research institutions, and target customers in the Yangtze River Delta economic zone.
Also, the company develops and manufactures complete vanadium redox flow battery systems spanning from kW-scale units for commercial applications to multi-MW installations for utility projects. Engineering teams hold multiple patents covering stack design, electrolyte preparation methods, and system integration approaches that provide technical differentiation.
COMPANY PROFILES
1.□DALIAN RONGKE POWER CO., LTD.
2.□VRB ENERGY
3.□INVINITY ENERGY SYSTEMS
4.□SCHMID GROUP
5.□PU NENG (PRUDENT ENERGY)
6.□GREAT POWER ENERGY & TECHNOLOGY CO., LTD.
7.□SHANGHAI ELECTRIC ENERGY STORAGE

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