BLINK SOLAR

Liquid flow battery group of the Institute of Chemical Physics in Rotterdam the Netherlands

Overview

Are flow batteries the future of energy storage?

Realizing decarbonization and sustainable energy supply by the integration of variable renewable energies has become an important direction for energy development. Flow batteries (FBs) are currently one of the most promising technologies for large-scale energy storage. This review aims to provide a comprehen ChemSocRev – Highlights from 2023.

What is a flow battery?

Flow batteries are a type of electrochemical ES, which consists of two chemical components dissolved in liquid separated by a membrane. Charging and discharging of batteries occur by ion transferring from one component to another component through the membrane. The biggest advantages of flow batteries are the capability of pack in large volumes.

Which membrane regulated by controlled solvent diffusion for a flow battery?

Shi, M. et al. Membranes with well-defined selective layer regulated by controlled solvent diffusion for high power density flow battery. Adv. Energy Mater. 10, 2001382 (2020). Dai, Q. et al. Thin-film composite membrane breaking the trade-off between conductivity and selectivity for a flow battery. Nat. Commun. 11, 13 (2020).

How does a flow battery differ from a conventional battery?

In contrast with conventional batteries, flow batteries store energy in the electrolyte solutions. Therefore, the power and energy ratings are independent, the storage capacity being determined by the quantity of electrolyte used and the power rating determined by the active area of the cell stack.

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Researchers Develop High-energy-density Aqueous Battery ...

In a new study published in Nature Energy, a research group led by Prof. LI Xianfeng from the Dalian Institute of Chemical Physics (DICP) of the Chinese Academy of ...

Chemistry Colloquium|Xianfeng Li:Research Progress on Flow Battery

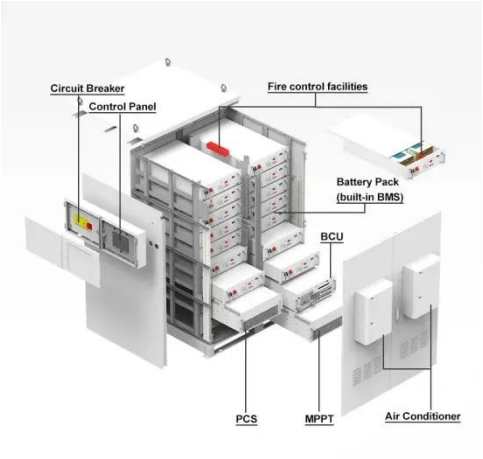
Dr. Xianfeng Li received a doctoral degree from Jilin University in 2006, after 3 years' postdoc in K. U. Leuven University, he was appointed as associated professor in Dalian Institute of ...

Scientists Put Forward the Concept of Zinc-Iodine Single

Recently, a research group led by Prof. LI Xianfeng and Prof. ZHANG Huamin from the Dalian Institute of Chemical Physics (DICP) of the Chinese Academy of Sciences ...

A novel strategy toward high energy density: Liquid-solid ...

The theoretical basis of liquid-solid two-phase chemical reaction (LTCR) for improving the energy density of flow batteries was first described based ...



Emerging chemistries and molecular designs for flow batteries

From the zinc-bromide battery to the alkaline quinone flow battery, the evolution of RFBs mirrors the advancement of redox chemistry itself, from metal-centred reactions to ...

Advancing Flow Batteries: High Energy Density and ...

Energy storage is crucial in this effort,

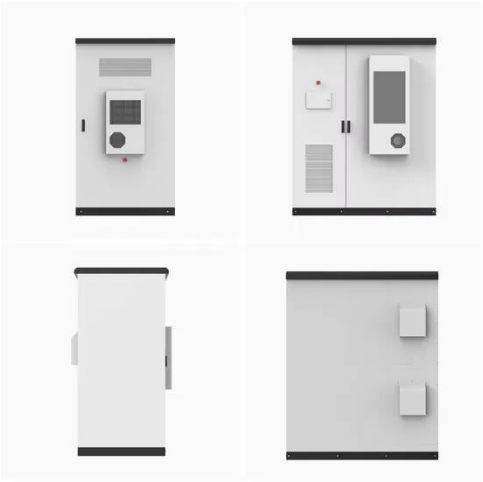
but adoption is hindered by current battery technologies due to low energy density, slow charging, and safety issues. A novel liquid metal ...

Development of flow battery technologies using the ...

Flow batteries (FBs) are currently one of the most promising technologies for large-scale energy storage. This review aims to provide a comprehensive analysis of the state-of-the ...

Novel organic redox-active molecules for flow batteries ...

Recently, a research group led by Professor Li Xianfeng and Professor Zhang Changkun from the Dalian Institute of Chemical Physics (DICP) of the Chinese Academy of ...



The world's largest! 100-megawatt all-vanadium liquid flow battery

On October 30, the world's largest and most powerful 100-megawatt liquid flow battery energy storage system, which was technically supported by the team of Li Xianfeng, a ...

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