

Electrolyte on both sides of the flow battery





Overview

How do flow batteries work?

Flow batteries are electrochemical cells, in which the reacting substances are stored in electrolyte solutions external to the battery cell. Electrolytes are pumped through the cells. Electrolytes flow across the electrodes. Reactions occur at the electrodes. Electrodes do not undergo a physical change. Source: EPRI K. Webb ESE 471 4 Flow Batteries.

What are the components of a flow battery?

Flow batteries comprise two components: Electrochemical cell. Conversion between chemical and electrical energy. External electrolyte storage tanks. Energy storage. Source: EPRI K. Webb ESE 471 5 Flow Battery Electrochemical Cell. Electrochemical cell. Two half-cells separated by a proton-exchange membrane (PEM).

Where is electrolyte stored in a battery?

In a battery without bulk flow of the electrolyte, the electro-active material is stored internally in the electrodes. However, for flow batteries, the energy component is dissolved in the electrolyte itself. The electrolyte is stored in external tanks, usually one corresponding to the negative electrode and one to the positive electrode.

How does a flow battery stack work?

In a flow battery stack, individual cells are typically fed with electrolyte in a parallel configuration, resulting in identical pressure drops across each cell. In this parallel liquid supply system, the distribution of electrolyte flow is closely related to the flow resistance in each branch.



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