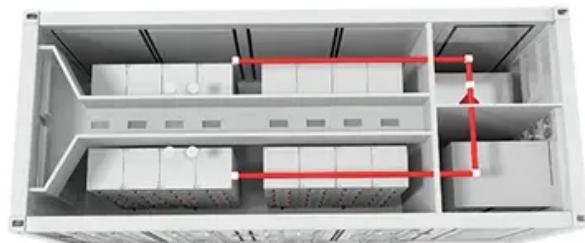


Equatorial Guinea's large-capacity all-vanadium flow battery



Overview

Are vanadium redox flow batteries suitable for stationary energy storage?

Vanadium redox flow batteries (VRFBs) can effectively solve the intermittent renewable energy issues and gradually become the most attractive candidate for large-scale stationary energy storage. However, their low energy density and high cost still bring challenges to the widespread use of VRFBs.

Are flow batteries suitable for large scale energy storage applications?

Among all the energy storage devices that have been successfully applied in practice to date, the flow batteries, benefited from the advantages of decouple power and capacity, high safety and long cycle life, are thought to be of the greatest potentiality for large scale energy storage applications . .

What causes the capacity decay of iron-vanadium flow batteries?

Thus, the capacity decay of Iron-vanadium flow batteries can be mainly attributed to the ion diffusions across the membrane. In the main, the capacity retention ability of VFB is superior to that of IVFB, because the VFB capacity is not only higher after 500 cycles, but also without unexpected fluctuation during the whole testing.

What are the advantages of a flow battery?

The flow battery employing soluble redox couples for instance the all-vanadium ions and iron-vanadium ions, is regarded as a promising technology for large scale energy storage, benefited from its numerous advantages of long cycle life, high energy efficiency and independently tunable power and energy.

How are the performance of two flow batteries analyzed?

The overall performances of the two flow batteries are examined by experimental methods. The capital costs are analyzed on the basis of a real 250 kW flow battery module. There are four following parts in the rest of this

paper. The experimental methods and conditions are shown in section 2.

Are all-vanadium RFB batteries safe?

As an important branch of RFBs, all-vanadium RFBs (VRFBs) have become the most commercialized and technologically mature batteries among current RFBs due to their intrinsic safety, no pollution, high energy efficiency, excellent charge and discharge performance, long cycle life, and excellent capacity-power decoupling .

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