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Demand for sulfuric acid in all-vanadium liquid flow batteries

Overview

Vanadium Flow Batteries (VFBs) are a stationary energy storage technology, that can play a pivotal role in the integration of renewable sources into the electrical grid, thanks to unique advantages like power an.

How does a vanadium flow battery work?

Fig. 2. A vanadium flow battery scheme. Pumps move the liquid electrolytes from the tanks to the stack where the redox reactions take place (courtesy of Elsevier J Power Sources). A vanadium flow battery uses electrolytes made of a water solution of sulfuric acid in which vanadium ions are dissolved.

Are vanadium ions stable in sulfuric acid?

Among these, problems in the stability and solubility of vanadium species in sulfuric acid, especially for the V (V) ions in electrolytes with concentrations of more than 1.8 M and above 40 °C, are the two main challenges to be addressed. To increase the stability and solubility of vanadium electrolytes, different strategies have been suggested.

Which electrolytes are supported in a vanadium redox flow battery (VRFB)?

A comparison study was conducted for various supporting electrolytes of sulfuric acid (H 2 SO 4), hydrochloric acid (HCl), and mixed acids (H 2 SO 4 + HCl) in a vanadium redox flow battery (VRFB).

What is a vanadium redox-flow battery?

The vanadium redox-flow battery is a promising technology for stationary energy storage. A reduction in system costs is essential for competitiveness with other chemical energy storage systems. A large share of costs is currently attributed to the electrolyte, which can be significantly reduced by production based on vanadium pentoxide (V 2 O 5).

Demand for sulfuric acid in all-vanadium liquid flow batteries

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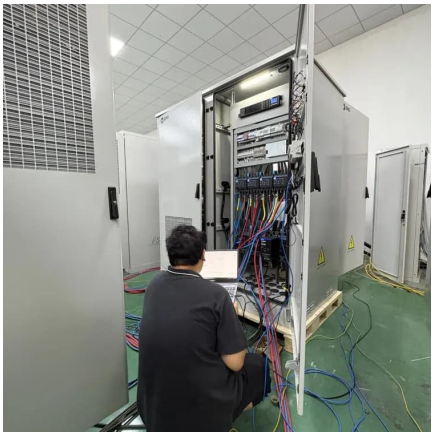

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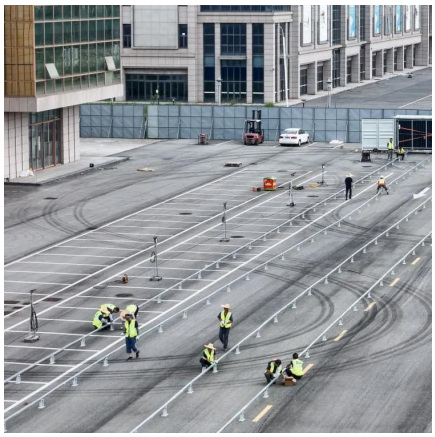

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