

Vanadium Flow Battery (VFB)

全钒液流储能电池

全钒液流电池是一种新型储能和高效转化装置，以不同价态的钒离子溶液作为电解液，通过电池堆中电极的电化学反应，实现电能的储存和释放，这个可逆的反应过程使钒电池可顺利完成充电、放电和再充电。

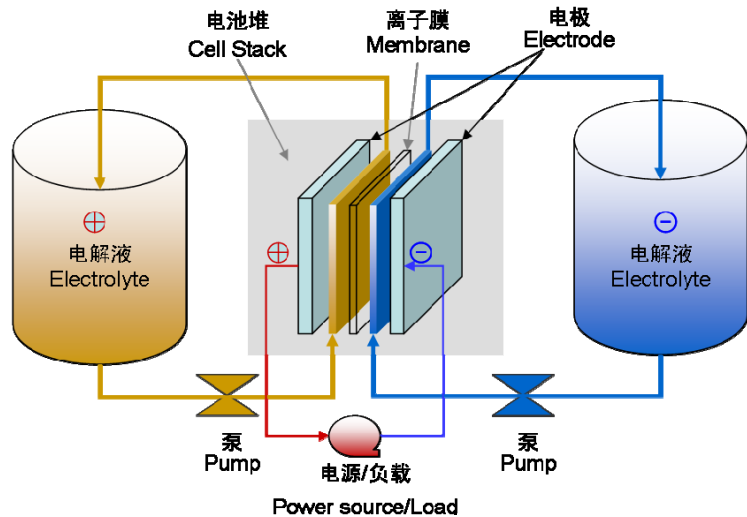
The VFB Energy Storage System (VFB-ESS) is an electrical energy storage system based on the vanadium-based redox regenerative fuel cell that converts chemical energy into electrical energy.

Energy is stored chemically in different ionic forms of vanadium in a dilute sulphuric acid electrolyte.

The reaction is reversible allowing the battery to be charged, discharged and recharged.

<http://www.sl-power.com/>

液流电池原理图
Vanadium Redox Battery (VRB)



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特点Characteristic:

- ❖ Long lifetime: Charge and discharge more than 100,000 times, 15 years. 系统使用寿命长，充放电次数超过100,000次，使用寿命达到15年以上。
- ❖ High efficiency: Round-trip AC to AC efficiencies of system are 70-80%. 系统效率高，系统循环效率可达70-80%。
- ❖ Support charge and discharge frequently, support charge and discharge under heavy current, can charge and discharge hundreds of times per day. 支持频繁充放电，支持频繁大电流充放电，每天可充放电数百次。
- ❖ Support overcharge and over-discharge, DOD > 80% 支持过充过放，支持深度充放电 (DOD > 80%)。
- ❖ Rapidly charge and discharge, Charge-to-Discharge Duration Ratio : 1.6:1 充放电速度比为1.6:1，能够实现快速充放电。
- ❖ Low self-discharge rate, and long-term storage. 自放电率低，可长期存放。
- ❖ Fleetly response, response time < 1ms. 响应速度快，充放电切换时间小于1毫秒。
- ❖ Customize system, power and capacity can be designed independently to meet different demands and system upgrade is easy. 电池系统定制化，功率与容量可独立设计。
- ❖ Low maintenance cost, low operating cost. 维护成本低，运营成本低。
- ❖ Environment friendly, quiet. 环保，无污染，无噪音。

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应用Applications:

- ❖ As energy storage system of wind power station
替代现有的铅酸电池，成为风电场动态储能系统的主体。
- ❖ As energy storage system of photovoltaic
光伏发电储能电池的首选。
- ❖ As energy storage system of power grid variable load
用于电网调峰，可提高能源利用效率，减少投资。
- ❖ As energy storage system of UPS of Base Station and Data Centre
作为通信基站和数据机房的后备电源，可提供长时间、安全、稳定可靠的备用电力供应。
- ❖ As energy storage system of Charging Station
钒电池的大容量、大电流充放、同时充放的特点技术，可以作为电动汽车、电动自行车、电动船舶等电动设备的理想充电电源。



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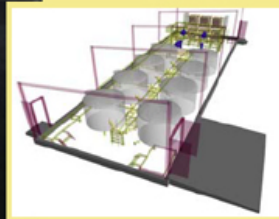


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- 风力发电
- 光伏发电
- 电网调峰
- 通讯基站
- UPS电源
- 分布式电站
- 交通市政



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