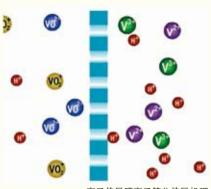
Research Group of Vanadium Flow Battery Energy Storage Technology, Dalian Institute of Chemical Physics, Chinese Academy of Sciences



离子传导膜离子筛分传导机理 Ions sieve-conducting mechanism



250kW 集装箱式单元储能系统模块 250kW contianered VFB energy storage unit module

arge scale energy storage is the key technique to solve the critical issues of Large scale energy storage is the key technique to solve the critical issues of discontinuity, instability in renewable energies and becomes pivotal for national energy security and sustainable development. Vanadium flow battery (VFB) is one of the most suitable candidates for large scale energy storage due to its attractive features like long cycle life, high safety, high storage capacity and environmental friendly. The research group of vanadium flow battery at Dalian Institute of Chemical Physics systematically grasped technologies of key materials, high power stacks, high efficiency flow battery unit module and stationary energy storage station according to more than 10 years' innovative research. More than 20 demonstration projects including the world largest 5MW/10MWh VFB system and the first 250MW/1MWh VFB system in Europe have been successfully implemented by the research group. The achievements created strategic emerging industry of flow battery in China and the group is leading the research development, industrialization and standardization of flow battery in the world.

Outstanding contributors of this research group

Zhang Huamin

Dalian Institute of Chemical Physics, Chinese Academy of Sciences.

The leader and organizer of the research group, who is responsible for proposing overall research directions, designing research strategies, supervising the project implementation. He leads the fundamental research, industrialization and standardization of flow battery.

Li Xianfeng

Dalian Institute of Chemical Physics, Chinese Academy of Sciences.

He is responsible for the research and development of ion conducting membranes. He firstly introduced porous ion conducting membranes in flow battery.

Liu Zonghao

Dalian Rongke Power Co. Ltd

He is responsible for the industrialization and generalization of flow battery system and the implementation flow battery demonstration projects.

Other members

Ma Xiangkun Gao Sujun Zhang Hongzhang Liu Tao Xing Feng Lai Oinzhi Wang Xiaoli Zhong Hexiang Chen Jian Rong Qian Wang Meiri Liu Jingkai Sun Jiawei Li Jie Qiu Yanling Liu Huiying



全球最大规模 5MW10MWh 全钒液流电池系统 The world largest 5MW10MWh VFB system

风电场外景 Overview of wind farm

电解质溶液区

Electrolytes region

Battery system region

电力电子控制区 Electronic control system



电解质溶液生产线 Prouduce line of electrolytes

研究集体突出贡献者

张华民

和标准制定。

李先锋

刘宗浩

全钒液流电池储能技术研究集体

研究集体推荐单位:中国科学院大连化学物理研究所

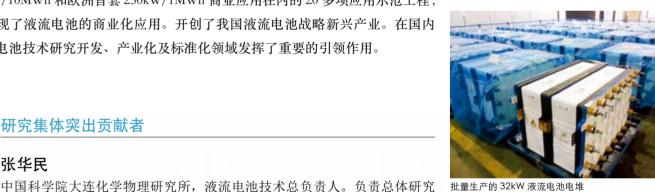
研究集体主要科技贡献:

大规模储能技术是解决可再生能源发电不连续。 不稳定特征的关键瓶颈技术,是国家能源战略 和能源安全的重大需求。全钒液流电池储能技 术因其使用寿命长、储能规模大、安全可靠、 环境友好等特点,成为规模储能的首选技术之

一。全钒液流电池储能技术研究集体通过对关键材料、核心部件及系统集成和控 制管理技术的创新研究,成为国际上全面掌握高性能全钒液流电池关键材料、大 功率电堆、单元储能模块及储能电站产业化技术的团队;实施了包括全球最大规 模 5MW/10MWh 和欧洲首套 250kW/1MWh 商业应用在内的 20 多项应用示范工程 率先实现了液流电池的商业化应用。开创了我国液流电池战略新兴产业。在国内 外液流电池技术研究开发、产业化及标准化领域发挥了重要的引领作用。



非氟离子传导膜生产线 Prouduce line of Non-fluoride ion conducting



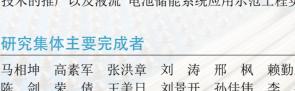
批量生产的 32kW 液流电池电堆 32kW VFB stacks

大连融科储能技术发展有限公司,负责液流电池储能系统工程化和产业化 技术的推广以及液流 电池储能系统应用示范工程实施。

方案、技术路线设计。领军液流电池基础研究、工程化放大、产业化应用

中国科学院大连化学物理研究所,负责液流电池膜材料基础研究,规模放

大和批量化生产技术开发。原创性的将多孔离子传导膜引入到液流电池。



枫 赖勤志 荣 倩 王美日 刘景开 孙佳伟



大功率液流电池电堆生产装置 Stacks assembly equipment