

Forum on Battery Materials and Energy Storage

Technology analysis of anode / cathode material of Li-ion battery

Michelle Hua, China Materialia

- Battery application is transferring from consumer dominant applications to automotive or energy storage application, which needs 2-5 times more energy density than current li-ion battery can offer. Big demands for high performance Li-ion battery exist
- Cathode and anode materials play an important role in li-ion battery performance: with the improvement of cathode and anode materials, energy density, safety or cost of the li-ion battery could possibly be upgraded. Compared to anode material, improvement in cathode material can play a bigger role in overall battery performance
- No perfect materials exist currently: There are trade-offs among different materials. Various methods such as coating, doping, changing the material morphology, and etc. are developed to improve current material performance. However, there are capacity limitations on existing materials
- A lot of efforts are put in the finding of new materials: high voltage cathode active materials or high capacity anode and cathode electrode materials are being developed, but there are still some problems for the commercialization of these materials, such as cycle time, etc.
- It is better to match the material with the right application: no perfect material exists, need to use the battery in the right applications.

Overview of China's Energy storage market

Tina Zhang, CNESA

- From 2000-2014, 840MW energy storage (not including pumped hydro, compressed air, and thermal storage) project has been implemented globally. In China, market size for pumped hydro is 21.5GW, accumulated project for energy storage (mostly batteries) exceeds 80MW, healthy growth for the past several years
- In US /Germany / Japan / South Korean, there are favorable policies for energy storage, such as government subsidies to support the growth of the industry. In China, though the government began to realize the importance of energy storage, there is no policy directly targeted to energy storage yet
- With the pending reform of the electricity market, the grid will be more open and market oriented. There will be more opportunities for energy storage application with the open up of demand side market in particular
- In the past several years, wind power+ solar + energy storage, and distributed micro-grid is the main applications for energy storage. Going forward, auxiliary

service on the generation side would become a valid market for energy storage application

Roundtable Discussion

- Experts from grid, energy storage integrator, research institutes as well as investment professionals had discussed current status of China's energy storage market, its business model and sustainability issues
- Zhejiang electric power academy has implemented several energy storage projects in islands, including Dongfushan island, Nanlu island, etc, using lead acid battery and LFP battery. The cost for using wind + solar + energy storage to provide power to those islands is much lower than connecting those islands to the grid system on the main land, the cost for undersea cable alone is quite prohibitive. The problems they encountered during these projects are complicated bidding process and less than ideal battery cycle life.
- The market condition for home use solar + energy storage system is not there yet in China. China has a very strong distributed grid network, has the ability to absorb the fluctuation caused by solar, the need for energy storage is not urgent there. Besides, low electricity price + low solar penetration rate, home owners have little incentive to implement energy storage systems. In contrast, this is a very valid market in Japan / Germany
- Electricity market reform: if the market for sales of electricity can be opened as people expected, it will create a valid application market for energy storage and demand response. The business model will be proven in some niche market first, such as frequency regulation

Startup Pitches

Founders from 7 energy storage related companies participated the road show

Mr. Eldon Mou

Beijing Raypower Technology is a returnee-founded company offering grid-scale energy modulation services with batteries. VC-backed and based in Beijing.

Mr. Bai Ou

Tech 9s is a battery material company focused on the development of high performance lithium titanate anodes and high voltage cathode material. Seeking VC financing, based in Beijing.

Mr. Francois Bordes

WeSmart is an open cloud platform that makes data from smart meters and connected devices accessible online to users both at home and at the office. WeSmart is an open solution collecting multi-fluid data, such as energy, water, temperature, controlling the connected devices through a multi-protocol, patented technology, offering a turnkey solution with minimal installation and configuration to clients. The WeSmart mobile App is available from both Android and iPhone stores. Raising A-round, based in Paris, France.

Mr. Yang Liu

PowerWise Energy is a total solution provider for customer energy storage needs. The company is focused on the R&D, integration and installation of BMS, high power electronics and PACK solution. Based in Shenzhen.

Mr. George Ma

Jiurun Energy is a leading supplier of Fe/Cr flow batteries. VC backed and raising a B-round, based in Suzhou.

Dr. Xiaodong Xiang

E-cube Energy was founded by two “thousand talent” experts. The company is focused on thermal energy storage and solar thermal power generation systems. VC backed and raising a B-round, based in Shanghai.

Mr. Binglun Tian

Pearl Hydrogen is a leading hydrogen fuel cell company in China. VC-backed and based in Shanghai