

Oxis Energy polymer Li-S pouch cell surpasses 450 cycles

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Oxis Energy, a UK-based developer of lithium-sulfur batteries, reported via Twitter that one of its standard polymer Li-S pouch cells surpassed 450 cycles this week. Oxis has developed a patented polymer lithium sulfur (Li-S) based battery technology platform using a lithium metal anode, a sulfur-based cathode, and a lithium sulfide electrolyte rendering the Li metal anode safe.

Battery systems using metallic Lithium offer very high specific energy; sulfur represents a natural cathode partner for metallic Li. A lithium-sulfur couple has theoretical specific energy in excess of 2,700Wh/kg. Oxis demonstrated 300 Wh/kg in 2010; the company has a target of 600 Wh/kg in 2016. (Sion Power, supported by an ARPA-E grant, also has a 600 Wh/kg in 2016 target for its Li-S batteries).

Despite potential advantages of cost and capacity, however, Li-S cells suffer from significant capacity fading during cycling and have not as yet achieved broad commercialization.

In January 2013, Oxis and Arkema, a global leading chemicals producer, signed a Joint Development Agreement to further improve the performance of the Polymer Lithium Sulfur cells battery. OXIS and Arkema identified several areas where key enhancements could be made, both in terms of both power delivered and reliability of Polymer Lithium Sulfur electro-chemical technology.

Under the agreement, Arkema will provide access to different specialty materials such as carbon nanotubes, electrolyte and advanced technical polymers that could be tested by OXIS for use in developing and extending its technology. The collaboration's aim is to optimize two aspects: the conductivity increase of the electrolyte that should improve energy density, and reinforcement of mechanical resistance of some components in order to extend the lifetime and safety of the battery.

Also in January, Oxis and Bayer MaterialScience AG signed two-year Joint Development Agreement on the development of new materials for use in lithium sulfur battery systems.

The company also entered a joint manufacturing agreement with GP Batteries International Limited, Singapore, to accelerate the commercialization of the proprietary lithium sulfur (Li-S) battery systems for use in different energy sectors of the world market

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