

First Semisolid Lithium Batteries to Arrive in Drones

Written by Marco Attard
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Startup SolidEnergy Systems sets to be the first company to start selling solid-state lithium batteries promising to provide twice the energy of conventional lithium-ion batteries without the risk of bursting into flames.



Lithium-ion batteries pack a powerful blend of capacity and long cycle life, but the use of a flammable liquid electrolyte (a dilute mixture of lithium salts) has led to injuries, product recalls and flight bans. Solid-state batteries use an inert solid, such as plastic or ceramic, instead of the liquid electrolytes, making them safer and, thanks to support for a pure lithium anode, boast higher energy density.

However, while the technology is promising, solid-state lithium batteries have a problem-- the lithium anodes tend to grow "dendrites," whisker-like structures that can reach the cathode and short the battery. SolidEnergy claims to solve the issue through coating the pure lithium foil anode with a mixed polymer-ceramic electrolyte. In addition, the cathode gets another electrolyte, a paste of lithium salts solvent enough to conduct ions at room temperature.

The result, the company says, is a battery with energy density of around 500 watt-hours per kg, twice the 250Wh/kg of conventional lithium-ion batteries. However the battery does have a charging cycle of just 200 times, compared to the 1000 times of conventional batteries.

The first SolidEnergy solid-state lithium batteries should out in 2018, and will find use in drones. The technology will then come in wearables in 2019, before a version aimed at electric vehicles launches in 2021.

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