

Microsoft visited by zinc air battery startup

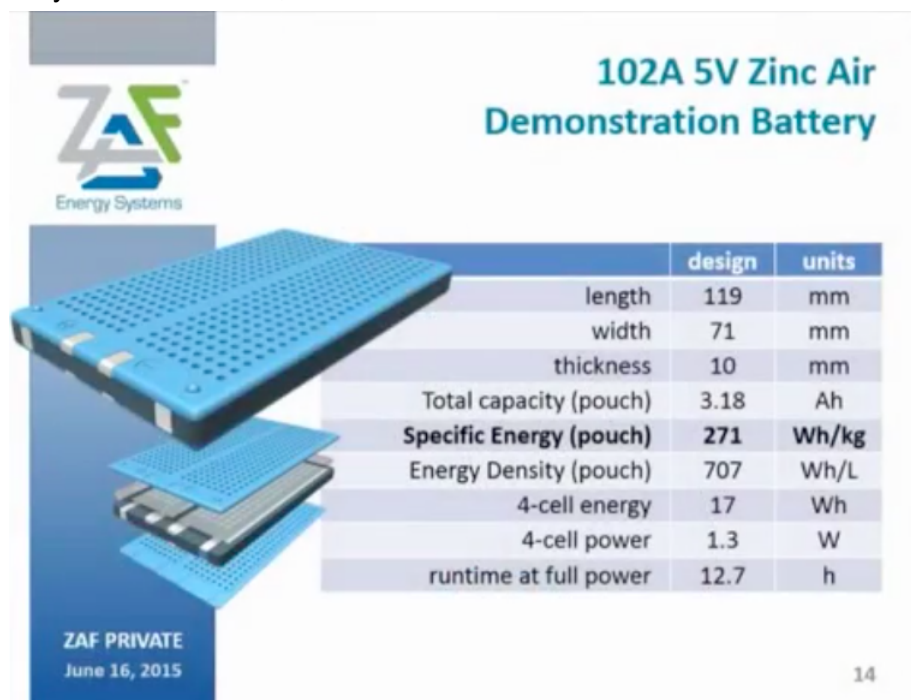
Zinc-air batteries are widely used in devices like hearing aids for their good performance to price ratio. The tricky part is of course to make them rechargeable. This is one of two technologies that [ZAF Technology](#) has been working on for the last couple of years.

Recently, the video of a pre-sales meeting from June 2015 at Microsoft Research [has been released](#). First and foremost, ZAF's goal was to find a premium partner for mobile devices. Eventually, Microsoft's product team got excited, acknowledging that ZAF is ahead of competing zinc air batteries.

Here is a rundown of ZAF's claims:

- Projected 500 cycles at 75% roundtrip efficiency:
- Twice the volumetric and gravimetric energy density of lithium-ion
- Established manufacturing equipment can be used
- No formation is necessary (lithium-ion cells tie up capital for weeks before being deployable)
- The pouches are resilient to contaminations (heat sealed only)
- Easy to recycle and safe (solid electrolyte)

A prototype consisting of four pouches was brought to the meeting. Its lifetime was 40 fully discharged cycles which is a fourfold increase within the prior few months. Naturally, taming the growth of pesky zinc dendrites plays a major role in that process. Despite the lifetime being still 12x behind the projected goal, ZAF's CEO was confident to have royalties rolling in by the end of 2016, be it with or without consumer electronics down the road.



14 patents spread across the internals of the battery bolster ZAF's claims. Many of them target what often falls short in battery R&D: cheap manufacturability. All together, manufacturing costs are projected to be 1/4th to 1/8th that of lithium-ion. Other key aspects include the membrane in development with the University of Tennessee that prevents the breathing battery running out of water in dry environments, supposedly self-balancing cells and high flexibility to begin with.

The benign nature of zinc-air in terms of environmental and fire safety comes at a price too. Among other metal-air batteries, zinc has one of the lowest energy densities. More accurately, zinc-air's theoretical limit is about 1/10th that of lithium-air with 11.000Wh/kg (a technology that [was abandoned in 2014](#) by two influential proponents but recently revived [in some variants](#)). Also, draining the battery in less than 2h would require forced air supply. If all bears out though, ZAF's rechargeable zinc air batteries are within the ballpark of cost and performance to make electric vehicles competitive-- a thought that both Microsoft and ZAF engineers entertained.

Apparently, Microsoft is on the look-out for better batteries. One of HoloLens' strengths is augmenting reality without a tether and it is probably not the last category of mobile computing to be unlocked by portable power. Ironically though, quite the opposite happened recently: the Surface Pro 3 suffers from [a bad run](#) of ordinary lithium-ion batteries from one supplier. I'm not aware of what progress has been made until today with commercializing zinc air batteries. Nevertheless, it's a worth to applaud Microsoft for making such details available because one thing is for sure: bringing comprehensive data along with (breakthrough) headlines is a good idea, at least in terms of progress.

Pics

Demo battery slide: https://www.dropbox.com/s/ix5b23h0e7ssr3p/ZAF_demo.png?dl=0

Profile pic: https://www.dropbox.com/s/jcqswwuk629gozad/copy2_sqr.jpg?dl=0

Bio

Alexander started out as an engineer pollution abatement at industrial scale. With a specialization in energy efficiency, he developed control systems that reduced the electricity consumption of such large machines. Next to his MBA, Alexander built a thriving community for distributed computing and became a speaker at the Global IoT Day 2015 about the shift from open data to open processes. He is now heading a project to improve collaboration in battery research. If want to participate in the survey, send an e-mail to contact@openbatt.org or visit the homepage of openbatt.org for more information.

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