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EmTech: Alta Devices Plans a Fast-Charging Solar iPad Cover

The maker of high-efficiency solar cells is targeting consumer electronics before taking on the grid.

Chastened by the demise of many solar-panel makers, Alta Devices, a solar startup based in Sunnyvale, California, has pursued ways to make money without taking on conventional silicon solar panels or fossil-fuel-powered plants. It has started selling solar panels to the military to power small unmanned aerial vehicles, and by the end of next year it plans to start selling an iPad cover powerful enough to make plugging in unnecessary.

Other solar startups attempted to directly challenge conventional silicon solar panels, but the price of silicon panels dropped far faster than expected, making it difficult to compete. “What we’ve done is take our technology, which is very high energy density, lightweight, and flexible, and map it into markets where we can make a difference, where we can actually add value and create a new solution, not just replace electrons that are already coming from a different source,” Chris Norris, Alta Devices’s CEO, said yesterday at the Emtech conference at MIT.

Solar iPad accessories already exist, but they don’t generate much power. Conventional silicon solar cells typically convert less than 20 percent of the energy in sunlight into electricity. But they’re heavy and relatively thick. The efficiency of thin, flexible solar cells ideal for iPad covers can be less 10 percent. Alta Device’s solar cells are thin and flexible, yet they’re also up to 28 percent efficient, or about three times more powerful than other flexible solar cells. “Using our material, the cover of an iPad can generate 10 watts of power in the full sun. That’s the same amount of power you get from the wall,” Norris says. Even ambient light from windows and lamps would generate substantial

amounts of power and could make it unnecessary to ever plug in, he says. “You could be disconnected completely. Completely portable.”

The problem right now is that Alta Devices' solar cells are too expensive for this application. As it works to bring down costs, its first application is for the military, since the military can afford to pay more for solar cells than consumers can. Alta's solar cells can extend the operating time of UAVs from 50 minutes to four hours and cut down on the number of batteries military units need to cart into the field. This is worth enough to the military for Alta to make a profit even on solar cells made on a small pilot production line.

In the longer term, Alta hopes to build larger factories to help bring down costs. One potential application is incorporating solar cells into solar shingles, such as the ones now made by Dow, which had invested in the company. Alta's cells could triple the power output of the solar shingles Dow makes now, which use CIGS solar cells from a Nuvosun, according to William Banholzer, CTO of Dow Chemical Company (see “[Alta Devices: Finding a Solar Solution](#)”). He says that would allow houses to generate far more power than they use—about 9 kilowatts.

Even in this application, Alta wouldn't directly compete with conventional solar panels. For solar shingles, the company could probably still charge more than conventional silicon solar panel makers, because the shingles are far cheaper to install.