

Printable Solar Panels on the Cheap

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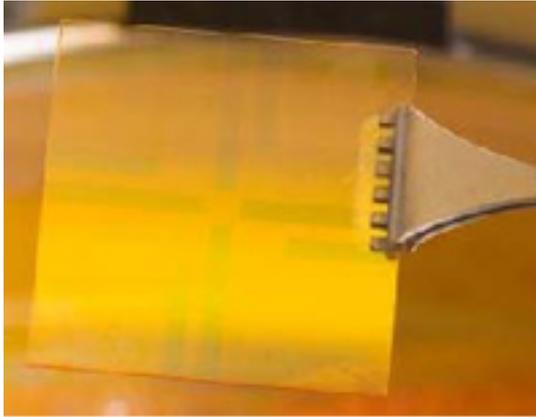


One of the hottest trends in power is “[conductive ink](#) [1]”—that is, ink that conducts electricity. Thus, we’ve seen the emergence of ultra-thin power solutions such as Fraunhofer Research Institution's [silk-screened batteries](#) [2]. One of the variants is printable solar cells, a technology still in its infancy. But the US Air Force, in conjunction with [Plextronics](#) [3], has [developed](#) [4] what they purport to be a “*significant step forward in printing inexpensive solar cells.*”

Plextronics describes their new tech thusly: “*Plexcore OC is a solution-processable, organic conductive ink that can serve multiple functions in printed electronic devices.*” The ink can be used to create organic photovoltaic solar cell panels—using ink-jet printers. This represents a significant advancement in portable power. It’s no surprise what the intended market is (the military).

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An example of Plextronics' Plexcore printable solar cells.

According to 2nd Lieutenant Christopher A. Vaiana of the Directorate's Nonmetallic Materials Division, *"Military and commercial operations demand portable, highly efficient power sources. Using the power provided by natural sunlight via solar cells is an attractive option, yet has thus far been restricted by cost and size."*

Plexcore is significantly cheaper than comparable options. The difference is stark—*"approximately \$50 per square meter versus \$500 per square meter for silicon-based panels."*

The suggested application is to fit the Plexcore solar panels directly onto soldiers' uniforms. Theoretically, the panels could power any number of portable devices (of which the military has manifold). According to [some estimates](#) [5], printable solar cells are two to five percent efficient. It's unclear whether Plexcore ink improves on that rating. If not, it's doubtful how useful Plexcore panels would be in a field environment. Manufacturers are constantly devising ways to equip soldiers with portable power generators. Kooky ideas like the [Biomechanical Energy Harvester](#) [6] knee brace will never fly. Plexcore, at least, looks good on paper (no pun intended). Extensive field testing will determine its fate.

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- [2] <http://www.ecnmag.com/article-silk-screened-batteries-071409.aspx?menuid=&adcode=section=effzone>
- [3] <http://www.plextronics.com/>
- [4] <http://www.wpafb.af.mil/news/story.asp?id=123157986>
- [5] <http://www.cosmosmagazine.com/news/2594/printable-solar-cells-way>
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