

3D printing goes solar

October 13 2014, by Marcia Goodrich

3D printing guru Joshua Pearce wants nothing more than to provide the means of production to everyone, especially people in developing regions who must get by on very little. But there has been a drawback.

3D printers make all manner of fun and useful things, but they do require electricity. And the grid is notoriously unreliable in many parts of the world. "What do you do if the power goes out while you are right in the middle of printing something?" says Pearce, an associate professor at Michigan Technological University. "It's not good."

Pearce researches both [solar power](#) and 3D printing and combined his specialties to develop two solutions in the form of open-source solar-powered 3D printers. One is designed for schools and businesses, the other for remote communities.

The first features an array of [solar photovoltaic panels](#) and a stand-alone printer, which could be stationed in a sunny schoolyard and print anything from consumer toys to science lab equipment. "It can make high-value items for pennies, but it's not very portable," said Pearce.

The second system is smaller and fits in a suitcase. While it doesn't have the capacity of the less-portable model, it is a RepRap and can thus replicate itself and make parts for larger printers. Plus, it can go almost anywhere.

"Say you are in the Peace Corps going to an off-grid community," Pearce says. "You could put your clothes in a backpack and take this

printer in your suitcase. It's a mobile manufacturing facility that can make whatever you and the community need or value. It has nearly unlimited flexibility."

Well-intentioned sustainable development projects sometimes fail because they don't fully understand the needs of the community, he said. A 3D printer can help overcome that problem as it makes open-source appropriate technology. "It can make whatever people want," Pearce said.

More information: The complete article is available online:
[www.academia.edu/8603622/Mobil ... Off-Grid Communities](http://www.academia.edu/8603622/Mobil...Off-Grid_Communities)

Provided by Michigan Technological University

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