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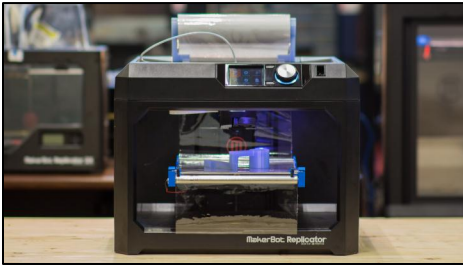
Celebrating invention, inspiring youth



Justin Keenan and Kevin Paroda, Penn State University (State College, PA)

\$10,000 Lemelson-MIT “Use it!” Undergraduate Winners

The Next Dimension of 3D Printing



The Challenge: Most full size traditional 3D printing requires continual human/machine interaction; a 3D object must typically be removed from the platform before the next print can begin. It is an inefficient process that restricts overall output and limits potential revenue for those using printers as a part of their business. Furthermore, full size 3D printers are still often too expensive for hobbyists and small businesses keep up with the rapidly improving technology built-in to each new printer model.

The Solution: 3D printing enthusiasts, Justin and Kevin are driven to advance the field and make 3D printers increasingly accessible and thereby reach and influence a growing audience of consumers and professionals. They created ECHODrive, an aftermarket vacuum chamber build plate to allow continuous automated printing. The device is sold as an add-on to existing 3D printers and works in assembly line fashion. Plastic film is pulled from a spool and vacuumed onto the platform; the 3D object is printed; the vacuum releases, rolls the film out of the way (with the completed print on top of it) and the process repeats with the next build.

ECHODrive provides remote printing capabilities and eliminates the need for human/machine interaction. It promises improved print quality over traditional aftermarket build plates – the one-size-fits-all solution mitigates warping and the size and shape of the print never impacts performance. It even makes it possible to print accurately with exotic materials without needing a temperature controlled environment. This technology is designed to attract those who cannot afford to purchase a new machine, but want to enhance their 3D printing capabilities. ECHODrive is the first commercially-viable option for the mid-range 3D printer market. Made of simple, easy-to-assemble materials, it will be priced at only \$300 when released on Kickstarter later this summer. Justin and Kevin have designed a product that takes 3D printing to the next dimension.

Application and Commercialization: Justin and Kevin have patented parts of their technology as a way to protect their business from larger companies, but are keeping much of the design open source. Their hope is to foster innovation and make it easy for the maker community to use the technology in ways that they might not even have imagined. The team has bootstrapped their way through the development of several prototypes through grants. They are now testing their product in classrooms and in the workshops of various other inventors.