

Broadband Collaboration Equipment Mobile Networks Security Storage White Papers Webcasts Tests

Micro-windmills can recharge cell phones

Share

A Taiwan company is already working with researchers on designs

By Lucas Mearian, Computerworld January 15, 2014 06:06 PM ET

Print

News

Computerworld - Researchers at the University of Texas at Arlington have designed a miniscule windmill with a micro-generator that can be used to recharge mobile devices.

Like < 93

Smitha Rao, a university research associate, and J.-C. Chiao, an electrical engineering professor, designed the micro-windmills. The two have filed for a patent for the devices, which are about 1.8 mm at their widest point.

A single grain of rice could hold about 10 of the tiny devices, and the researchers believe hundreds of them could be embedded in a cell phone sleeve for recharging purposes. Once the sleeve is on the phone, a user would simply wave the device in the air or set the phone in a windy place to get the tiny propeller blades turning, allowing the microgenerators to produce electricity.

The windmills compared to a penny. The wind generators are bout 1.8 mm at their widest point.

The researchers' work attracted the attention of Taiwanese electro-mechanical fabrication company WinMEMSTechnologies, which has the researchers brainstorming on designs.

"The company was quite surprised with the micro-windmill idea when we showed the demo video of working devices," Rao said in a statement. "It was something completely out of the blue for them and their investors."

The idea for the windmills was originally a blend of origami concepts and conventional wafer-scale semiconductor device layouts created so the complex 3-D moveable mechanical structures can be self-assembled from two-dimensional metal pieces using planar multilayer electroplating techniques.

"The micro-windmills work well because the metal alloy is flexible and Smitha's design follows minimalism for functionality," Chiao said in a statement.

Once WinMEMS became interested in the research, it started a relationship with UT-Arlington. Company representatives visited with the UT-Arlington team several times last year to discuss collaboration. An agreement between the school and WinMEMS allows UT-Arlington to hold the intellectual property rights to the micro-windmills while WinMEMS explores commercial opportunities.

WinMEMS Technology demonstrates the micro-windmills.

The micro-windmills include gears, inductors, pop-up switches and grippers. All of those parts are as tiny as a fraction of the diameter of a human hair.

"It's very gratifying to first be noticed by an international company and second to work on something like this where you can see immediately how it might be used," said Rao. "However, I think we've only scratched the surface on how these micro-windmills might be used."



Latest News

12 toughest U.S. cities for tech recruiting

Microsoft extends malware protection to XP foot-draggers Cisco fixes remote access vulnerabilities in Cisco Secure

3

Access Control System Why even ISPs will regret the end of net neutrality

This Raspberry Pi Tablet is absolutely gorgeous

View more Latest News

Home Networking White Papers

Improving Business Value of WAN Optimization In this study, as in the 2007 study, IDC found that customers were able to reduce IT costs, improve...

Accelerating Cloud Performance with WAN Optimization Today's smart CIOs are assessing their workloads against business needs and analyzing where each...

Hyperconvergence Infographic A vast number of technologies are currently flooding networks with enormous amounts of traffic and...

View more Home Networking White Papers

The micro-windmills were tested successfully in September 2013 in Chiao's lab. The windmills operate under strong artificial winds without any fracture in the material SanDisk because of the durable nickel alloy and the aerodynamic design. "The problem most MEMS designers have is that materials are too brittle," Rao said. BACK TO MENU "With the nickel alloy, we don't have that same issue. They're very, very durable." The micro-windmills can be made in an array using batch processes. The fabrication cost of making one device is the same as making hundreds or thousands on a single wafer, which enables for mass production of very inexpensive systems. 1 2 Next > **GET READY FOR BIG DATA GROWTH** Print Like {93 Share FREE DOWNLOAD: 7 BYOD Policy Essentials (Network World)» GET LEADING-EDGE STORAGE Most Read How to make 96,000 pounds of WWII machinery into high-tech research platform Microsoft Hyper-V bangs away at VMware's popularity GET THE STRENGTH Cisco offers advice on Target breach OF EXPERIENCE Relive the 1990s with these ancient, still-functioning websites The mixed fate of Sun tech under Oracle From CIO.com From CSO Online Learn more Top Android Widgets for Your Smartphone and Slideshow: 5 ways to lock down your mobile device Tablet Slideshow: 10 mistakes companies make after a 12 Big BYOD Predictions for 2014 data breach Does Google Authorship Matter for SEO? How to rob a bank: A social engineering walk through What to Look for When Hiring Social Media Tech Talent in 2014 Which smartphone is the most secure? Read more at CIO.com

Read the latest from CSO Online

Originally published on www.computerworld.com. Click here to read the original story.

Our Commenting Policies

http://www.networkworld.com/news/2014/011514-micro-windmills-can-recharge-cell-277... 1/16/2014