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Innovative Micro-windmill Technology can Charge Your Cell Phone

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Micro-windmill technology is an innovative new way to power cell phones and other technological devices.

University of Texas at Arlington [□] graduate research associate Smitha Rao and electrical engineering professor J.-C. Chiao developed a smaller-than-ever micro-windmill. The micro-windmills were developed due to the influence of advances in micro-robotic devices. The micro-windmills [□] are 1.8 millimeters at their widest point and a grain of rice could hold approximately 10 micro-windmills; however, the tiny technology has the possibility to generate large amounts of wind energy. According to the University, micro-windmills are made by "blending origami concepts into conventional wafer-scale semiconductor device layouts so complex 3D moveable mechanical structures can be self-assembled from two dimensional metal pieces utilizing planar multilayer electroplating techniques."



In September 2013, the micro-windmills successfully passed tests in Chiao's lab. For instance, the windmills continued to operate under strong artificial winds without any fracture in the material. The fabrication cost to making the micro-windmills is fairly inexpensive since they can be made in batches.

Examples of how micro-windmill technology can hit the market include sleeves for mobile phones and flat-panels on buildings. Cell phone sleeves can be manufactured by embedding hundreds of the micro-windmills into a cell phone sleeve. Customers can place their phones in the sleeve when their phone is out of battery power, wave the phone in the air to recharge the battery, and use the phone again. The micro-windmills can be cheaply made on surfaces of portable devices as well, such as smart phones. An iPhone 4, for example, can fit approximately 2,040 micro-windmills on its surface. Additionally, flat panels with thousands of micro-windmills can be mounted on the walls of houses or buildings to gather energy for lighting, security and wireless communication. WinMEMS, a micro-electrical-mechanical-system manufacturer, is taking the next step and will commercialize the micro-windmill technology.

Manufacturers, such as WinMEMS, that add products to their supply chain [□] often find themselves facing new challenges. For instance, producing the most innovative products with an older, legacy software solution creates expensive supply chain customization and never-ending implementations. Therefore, manufacturers wanting to introduce new products, and have a leg-up over the competition, have enterprise resource planning [□] (ERP) software that centralizes data and streamlines operations. Overall, it is essential to have the ERP software [□] in place to move forward with today's innovative products.

Chiao's proud that a manufacturer recognizes the new product and is taking the first-step to move micro-windmill technology toward the marketplace. Rao added, "We've only scratched the surface on how these micro-windmills might be used."

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