Sensors Expo Report, 2009

Figure 1. Infinite Power Solutions' THINERGY micro-energy cells (MECs)provide tens of Watt-hours of energy when recharged over their lifetime.

Energy harvesting technology took center stage at this year's Sensors Expo in Rosemont, IL. Whether the solution obtained its power from the sun, heat, vibration, wind, RF or magnetics, there was a device at the show to take advantage of many of these or other ambient conditions.

Infinite Power Solutions' THINERGY thin micro-energy cells (MECs), in capacities of .0 mAh and 0.4 mAh initially, are positioned as the world's most powerful batteries for their size and outperform all other micro-batteries. When recharged over their lifetime, provide tens of Watt-hours of energy, equivalent to or more than traditional primary cells, and when combined with ambient energy harvesting, they offer perpetual power to wireless sensor nodes and other micro-systems for more than a decade of maintenance-free operation. At 170 mu deep, they are easily stackable or embedded deeply within PCBs. Their high-power discharge eliminates the need for external boost capacitors, and they feature a very low leakage of less than 1 percent reversible charge loss per year.

Figure 2. Advanced Cerametrics' Harvestor-III power modules use patented piezoelectric fiber composites to harness mechanical vibration energy.

Lambertville, NJ-based Advanced Cerametrics Incorporated's Harvestor -III line of power modules was released at the show, offering perpetual power for microcircuit applications. Using patented piezoelectric fiber composites to harness mechanical vibration energy from the environment in combination with the company's EH1000 energy management circuitry, the Harvestor III offers faster and higher power availability for sensors, wireless transponders and other low-power applications.

Cymbet displayed its EN CBC5300 Energy harvesting module for use with small photovoltaic cells. It features more than 5000 recharge cycles, low self-discharge, fast charging times, stable output voltage, and using two CBC050 energy chips, offers 100 uAh of drop-in power for devices that harvest ambient solar energy.

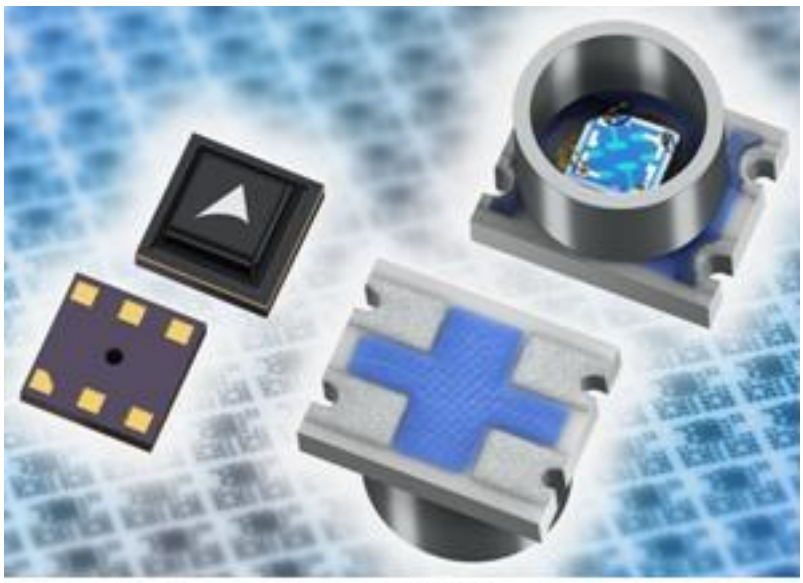

Figure 3. Epcos' T5300 digital pressure sensor measures 2.2 mm x 2.6 mm x 0.9 mm.

Also introduced this spring, Kionix' KXTF9 tri-axis accelerometer with Directional Tap/Double-Tap interface provides 12, unique, tap-enabled commands for customer-specified functions. Directional Tap/Double-Tap detects a quick, light tap, or double tap, on any of the six faces of an object (±X, ±Y, and ±Z). The embedded algorithm allows the accelerometer to discern a single or double tap and the direction from which the tap originated so

designers can use these 12 tap/double taps as commands to applications on their product.

In the MEMS department, Epcos' T5300 digital pressure sensor is presented as the most compact packaged sensor of its kind. Measuring 2.2 mm x 2.6 mm x 0.9 mm, the piezoresistive MEMS sensor has a power consumption of 2 µA in sleep mode and less than 2 mA while operating.

Microchip Technology made a flurry of announcements. The company began a joint

Figure 4. Microchip Technology with Zero G Wireless, Inc. offer modules for Microchip's 8-, 16- and 32-bit PIC MCUs and dsPIC DSCs.

engineering program with ZeroG Wireless, Inc. to develop an optimized Wi-Fi solution for embedded designers, resulting in modules for Microchip's 8-, 16- and 32-bit PIC MCUs and dsPIC DSCs. Microchip also announced a longer-range IEEE 802.15.4 Wireless Module -- the MRF24J40MB – which adds +20 dBm of transmit power via an integrated power amplifier (PA) and -102 dBm of receive sensitivity via the integrated LNA. A newly introduced MCP2036 analog front end (p/n MCP2036) for inductive touch-sensing applications is fully integrated and works with almost any 8-, 16- or 32-bit PIC MCU or dsPIC DSC. Finally, Microchip announced the MRF49XA Sub-GHz transceiver radio, covering the 434/868/915 MHz unlicensed ISM RF band. It retains compatibility with its existing suite of development tools, so it can be integrated with any 8-, 16- or 32-bit PIC MCU.

The Sensors Expo & Conference returns to Rosemont, Illinois, June 7 to 10, 2010. We'll see you there!

Source URL (retrieved on *05/20/2013 - 12:50pm*):
http://www.ecnmag.com/articles/2009/07/sensors-expo-report-2009?qt-recent_content=0