

advertisement

advertisement

[You are currently](#) » Article Detail

Industry News

Plenary Speakers Point To Future of nanoPower

June 3, 2008

Exclusive



Second Annual nanoPower Conference

The Plenary Session of Darnell's second annual **nanoPower Forum** (nPF '08) pointed toward the future of this rapidly emerging area. Peter Spies with the **Fraunhofer Institut** in Nurnberg, Germany lead off the conference discussing "Requirements of Power Management ICs for Energy Harvesting Transducers."

"Power management is THE enabling technology energy harvesting power supplies," stated Dr. Spies.

"Improvements in power management will lead directly to the development of new applications for energy harvesting," he observed.

Changing environmental conditions have a direct influence on the efficiency of energy harvesting transducers. Intelligent power management that includes maximum power point (MPP) tracking is a must to achieve optimal efficiencies. Most digital power management techniques are not applicable in this area. Analog techniques such as op amps operating with 1µA can be effective when designing MPP solutions for energy harvesting transducers.

In addition to improving the efficiency of energy harvesting transducers, Dr. Spies pointed out that technology scaling will be a critical factor enabling new applications. Using the International Technology Roadmap for Semiconductors he analyzed the march toward ever lower supply voltages and current needs of semiconductor devices. He concluded that



advertisement

Top Visited Stories

Event Calendar

This Week's Top 10 Stories

- [Bel Fuse Sends Letter To Power-One Urging Board Of Directors To Divest Business Units](#)
- [Li-Ion Battery Developments For EVs Intensify As Gas Prices Skyrocket](#)
- [Zilker Labs Announces Additions To Digital-DC™ Family, Including An Integrated 6A Digital DC-DC Converter](#)

advertisement



XL160

- ★ Up To 90% Efficiency
- ★ 8.5 W/in³
- ★ 3" x 5" Footprint

advertisement

Did You Know?

On June 16, 1998, a Brooklyn jury tossed out a lawsuit filed against Compaq and its recently acquired subsidiary, Digital Equipment Corp. (DEC). The suit had been filed by a group of nine

advertisement

DARNELL'S
Power
Packs
for
Portable
Electronics



advertisement

as device geometries shrink, managing leakage currents will be a major challenge in the development of systems powered by energy harvesting transducers.

Charles Lakeman from the Micropower Division of **TPL, Inc.** in Albuquerque, New Mexico closed out the Plenary Session with the observation that, "Harvested energy is inherently low power, variable, unpredictable and inconsistent."

He described how those challenges are met with the company's EnerPak™ devices to realize the potential of energy harvesting systems for meeting the power needs of wireless sensors. The EnerPak design uses energy harvesters to provide continuous low-level power while simultaneously charging proprietary energy storage systems that provide back-up and pulse power capabilities.

In the following session, Steve Simon, CTO with **AlwaysReady, Inc.** presented the company's "electronically activated" Smart NanoBattery. The device exploits the phenomenon of *electrowetting* – the ability to electronically manipulate the way liquids behave when in contact with a solid or porous surface. Water will bead up on a surface that is *superhydrophobic*, but can be made to move or spread out by electrowetting. The same is true for an organic liquid if the surface is *superlyophobic*.

The Smart NanoBattery operates by manipulating the liquid electrolyte via a proprietary silicon structure, a porous membrane, combined with unique battery architecture. This technology can be used with various primary and secondary battery chemistries and produces batteries with virtually unlimited shelf life.

In the final session of day one, Arthur Chait, Chairman, President and CEO of **EoPlex, Technologies Inc.** discussed "Bridging the Gap Between Complex Multi-material Microscopic and Miniature Devices" such as piezoelectric energy harvesting transducers. A relatively new process that can meet the requirements for energy harvesters has been developed by EoPlex.

The design freedom provided by the EoPlex process allows engineers to create new optimized designs at low cost. EoPlex builds parts in layers, but unlike rapid prototyping, it is a true high-volume manufacturing process that produces thousands of parts simultaneously from many different materials. These parts include active elements like: circuits, catalyst beds, mixing chambers, capacitors, and piezoelectric actuators that are produced all in one step.

The advances that made the EoPlex method possible include both new process technology and new materials technology. The process technology

people who claimed that DECY's keyboards had caused them "repetitive stress injuries." In return for their pain, the nine plaintiffs had sought a tidy \$10 million in damages. While the verdict may have been a sharp disappointment for the plaintiffs, it was just another day in court for DEC and the embattled keyboard industry.



Get the PowerPulse Newsletter
delivered daily

[Click Here to Subscribe](#)

Powercasts

**Conferences
& Forums**

**Darnell's
Digital Power Europe**

**Darnell's
Digital Power Forum**

**nanopower
FORUM**

covers new ways to use printing as a forming tool. The materials technology involves new proprietary printing pastes or "inks" that are the building blocks with which to create the unique 3-D structure.

 [E-mail this story](#)

On the Web (links open in a new window):

[AlwaysReady Inc.](#)

[Eoplex Technologies Inc.](#)

[Fraunhofer Institut](#)

[TPL Inc.](#)

Related Stories:

[TPL Develops New Polymer with High Dielectric Constant](#) - January 22, 2001

[View more related stories...](#)

Visit our Power Communities:

[Communications Power](#)

[Energy Efficiency](#)