

# Press Release

Erlangen,  
November 5, 2010

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Electronica 2010 Munich,  
November 9 – 12, 2010,  
hall B2, booth 518

## **Power Generation Using Ambient Vibrations and Temperature Gradients – An Optimized Approach to Energy Harvesting**

Fraunhofer IIS utilizes ambient vibrations and temperature gradients to power electronic devices. The researchers have developed optimized voltage converters and “maximum power point trackers” as the key components of the energy harvesting systems.

The energy harvesting technology uses energy available in the natural environment, like light, motion or heat. To derive electrical energy from thermal gradients, thermoelectric generators convert temperature differences into electrical voltages. The produced voltage depends on the temperature gradient applied. With the voltage converter IC developed by Fraunhofer IIS already minimum temperature differences of 1 to 2 degrees Celsius can be used; like the temperature gradient between human skin and the environment.

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In addition to that, forces like ambient vibration or acceleration can be converted into electrical energy using piezoelectric effects. The Fraunhofer voltage converter IC can scavenge electric power from low-frequency ambient vibrations, as they occur in civil engineering structures and buildings.

The new energy harvesting systems power electronic devices like transceivers, sensors and displays with electric energy. First industrial application areas are sensor networks for machine and facility condition monitoring, tire pressure monitoring sensors, wireless light switches and sensors for

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building automation. Energy harvesting systems can also be employed in medical engineering, logistics and the consumer industries. Fraunhofer IIS offers individual components as well as turnkey or customized systems for system and device integration.

Fraunhofer showcases its latest energy harvesting technologies and energy generation systems using thermal gradients and ambient vibrations at the Munich fair Electronica from November 9 to 12, 2010.

#### About Fraunhofer IIS

Founded in 1985 the Fraunhofer Institute for Integrated Circuits IIS in Erlangen, today with more than 750 staff members, ranks first among the Fraunhofer Institutes concerning headcount and revenues. As the inventor of mp3 and co-inventor of the MPEG 4 AAC audio coding standard, Fraunhofer IIS has reached worldwide recognition.

It provides research services on contract basis and technology licensing.

The research topics are: Audio and video source coding, multimedia realtime systems, digital radio broadcasting and digital cinema systems, integrated circuits and sensor systems, design automation, wireless, wired and optical networks, localization and navigation, imaging systems and nanofocus X-ray technology, high-speed cameras, medical sensor solutions and supply chain services.

The budget of more than 90 million Euro is mainly financed by projects from industry, the service sector and public authorities. Less than 25 percent of the budget is subsidized by federal and state funds.

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