

PRESS RELEASE

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Fraunhofer ENAS develops energy efficient sensor systems

At the ILA Berlin Air Show 2014, Fraunhofer ENAS and the Center for Microtechnologies of the TU Chemnitz present how novel wake-up generators make high precision sensor systems energy efficient and reliable.

Nowadays, high precision inertial sensors are more and more used in wireless systems measuring inclination, acceleration or vibration. These sensors are comparatively energy consuming. The energy is often provided by batteries in such wireless systems. If the system is permanently in working mode, the usability of the wireless sensor system is limited by the capacity of the batteries. Researchers of Fraunhofer ENAS and the Center for Microtechnologies of the TU Chemnitz developed a new concept for the power management of such smart systems. Thereby, they enhance the durability of a conventional battery supply at least ten times. Due to the implementation of a wake-up-generator it is possible to use the power-down mode of the sensor system during a period without external excitation. If a mechanical excitation signal occurs, the generator transduces it in an electrical signal which wakes up the whole system. During the power-down mode the sensor system consumes less than $1.35 \mu\text{A}$. Compared to that, very good but standard low energy sensor systems require more than $10 \mu\text{A}$ in specific low power modes. The novel power management concept ensures a long operating duration for high precision measurement.

The novel wake-up generator is now presented at the ILA Berlin Air Show. The Fraunhofer researchers will show the working principle by a cube with integrated high precision inclination sensors and an integrated wake-up generator. The visitors can see the measurement data in real-time. During the power-down mode of the cube software shows the current energy consumption. If the cube is moved, the generator records the acceleration and activates the sensor system. Switching to the normal operation mode takes only a few microseconds. By means of the inclination sensors the motion of the cube is shown as 3D model on a monitor. Such new energy efficient systems are applied for transport monitoring or structural health monitoring of aerospace components.

IN COOPERATION WITH


Zentrum für
MikrotechnologienTECHNISCHE UNIVERSITÄT
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Editorial notes

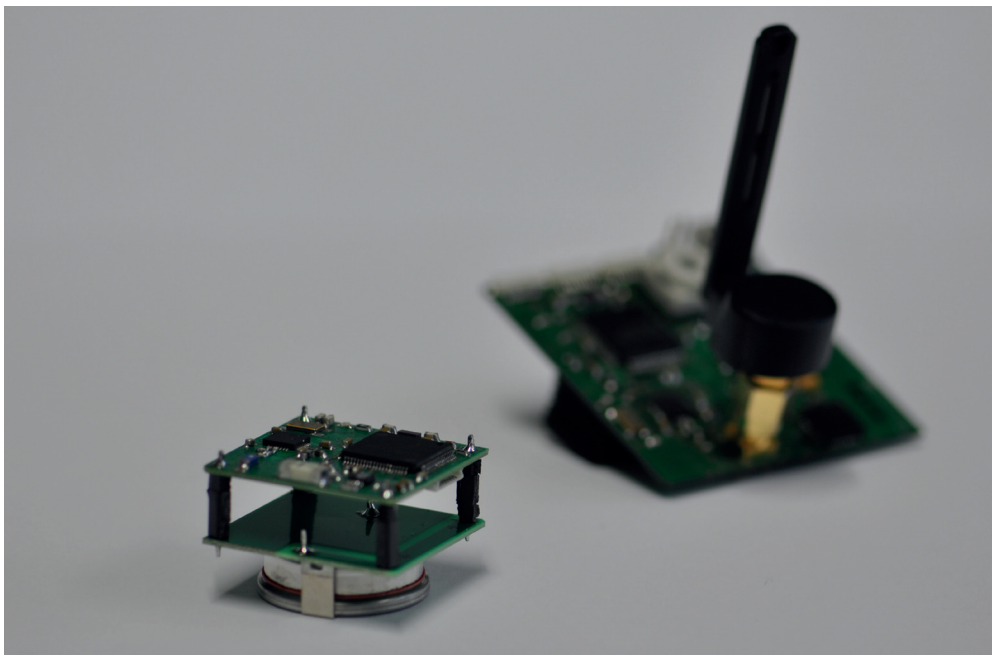
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The wake-up generator is introduced by Fraunhofer ENAS at the ILA 2014 in hall 6 on the joint booth no 6212 "Aviation" of the Fraunhofer Gesellschaft.



The sensor node with high precision inclination sensors and wake-up generator is an energy efficient system with a power consumption of 1.35 μA in power-down mode. The working principle is shown by a cube, which measures inclination, and displayed by a 3D model in real-time. By means of the wake-up generator the system is permanently ready for operation but needs less energy than comparable systems.

Figure © Fraunhofer ENAS | Acknowledgement – colored and print quality:

http://www.enas.fraunhofer.de/en/news_events/presse_uebersicht.html.

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