

## Press Release



### **Body- hugging supervision of heart and lung function thanks to elastic Printed Circuit Board – Polyurethane allows measurement directly on the skin**

#### **Diagnostics of new-born children promoted**

Würth Elektronik Rot am See and the Fraunhofer institute of reliability and micro integration in Berlin developed an elastic electronic printed circuit board now brought to series production readiness that might decisively facilitate the diagnostics in particular with new-born children. The TWInflex-Stretch PCB is integrated in an application of our customer Swisstom AG, a belt applied to the skin to measure babies' heart and lung function in a quite soft and gentle way – without surgery – and monitored by the doctor in dynamic images. Utilization of radiological medical application is not necessary.

The innovation is based on the use of a new base material for the PCB production: polyurethane. The material usual as standard for building PCBs – epoxy-resin reinforced glass fibre – well-proven in practice millions of ways. Since it is not flexible, its application area in electronics is limited, though.

It is about 4 years when the R&D team at Würth Elektronik started to develop an alternative jointly with the Fraunhofer Institute: Polyurethane is ductile and can be folded, crumpled or even cleaned in the washing machine's delicate program at 30 °C – an important aspect when applying printed circuits directly on human skin.

The medical sector might become a predominant application field, Dr. Jan Kostelnik, head of Würth Elektronik's R&D department is certain.

The product is now ready for serial production. Now, the elastic printed circuit is used in a measuring instrument of the Swiss company Swisstom AG – a device for lung and heart function monitoring. Now , thanks to the elastic and skin- friendly material – measuring is possible not only for adults, but also for infants.

„The electric impedance tomography is a supervision method free of radiation, radiograms become redundant“, emphasizes Dr. Jan Kostelnik. The development of the belt was part of the EU-project CRADL (Continuous Regional Analysis Device for neonate Lung). Guido Schelling, COO of Swisstom, explains the functionality of the measuring belt: „Swisstom products are based on the principle of electric impedance tomography. The electric impedance tomography (EIT) is a imaging process method for intensive care medics, pulmonologists and physiotherapists, providing real-time information about local respiration. Thus, EIT allows for continuous deployment and monitoring of the treatment's effectivity, real-

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time and directly at the patient's bedside. In our view, there is no alternative to electric impedance tomography for infants at present“, explains Swisstom COO Guido Schelling.

**Picture:** The neonatology belt in practical application. Photo : Swisstom / CRADL

**Watch video:**

<http://cradlproject.org/>

**About Swisstom**

*The Swisstom AG headquartered in Landquart, Switzerland develops and produces innovative medical devices. The new lung function monitor allows life-saving treatments of patients in intensive care and under general anaesthesia. Contrary to the customary tomography, the images of Swisstom is based on radiation-free principles - the electric impedance tomography (EIT). There are currently no comparable devices able to display show such a regional organ function continuously and on a real-time basis at the patient's bedside. Swisstom achieve their competitive advantages by passionate engagement in the non-invasive tomography aiming on improvement of life and therapies for patients.*