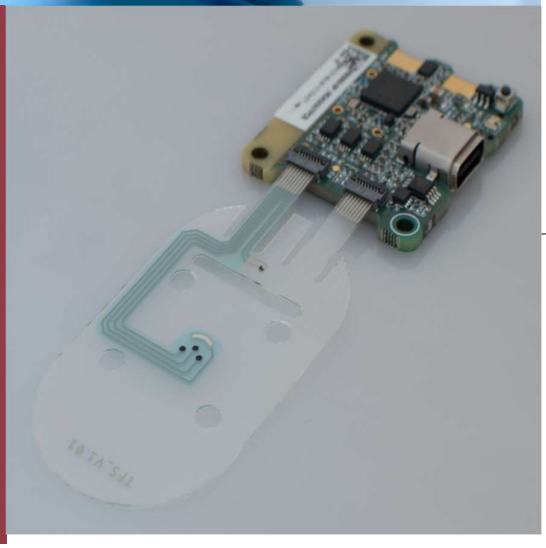
Flexible & Wearable Electronics
Application Experiments

xsensio

Company Profile

Xsensio is an innovation-driven digital health company dedicated to solving one of the biggest challenges in healthcare: the lack of real-time, continuous monitoring of relevant health parameters.

To achieve this vision, Xsensio is building the breakthrough Lab-on-SkinTM wearable: a modular miniaturized sensing platform that will offer unique health insight through the continuous and real-time analysis of proteins and hormones at the surface of the skin during critical health events, to improve standard of care in a simple and minimally-invasive way.



Problem to be solved

Today athletes and coaches must sample bio trackers by invasive blood testing or collecting sweat with absorber patches for external analysis. All that is time consuming, takes a lot of effort and must be very well organized with a specialized institute. It further provides only a snapshot information.

Xsensio proposes a wearable device that continuously collects sweat at the surface of the skin, and continuously screens its content to detect changes in real-time. It is aimed at athletes as a wearable and non-obtrusive device to track sodium, potassium, and later pH and glucose concentrations in sweat during physical activity for performance improvement and injuries avoidance.

Solution provided by SmartEEs

A patch design has been transferred into a printed electronics version and then printed on a plastic film. Design rules and materials were adapted for screen printing. TNO (SmartEEs2) realized the flexible electronics by screen printing Ag, carbon, Ag/AgCl & passivation ink on a PET film. The flexible electronics has been cut out by laser cutting. Xsensio deposited the functional ionic sensitive layer by aerosol jet printing on the electrodes. Xsensio developed the fluidic layer system adapted to the flexible electronics for collecting sweat on skin. Further Xsensio developed the read out & communication electronic boards that connects to the flexible electronics sensor platform. An encapsulation produced by 3D rapid prototyping has been realized by Xsensio.

Business model & impact

Goal was to review the sensor platform approach taking into account the flexible electronics technology to replace the glass chip microfabrication process. Sensor production costs are reduced by at least 60% and sensor response stability improved. The objective was achieved in the project as a completely assembled flexible sensor platform was created ready for full manufacturing.

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