

First field tests on snow for the PyzoFlex[®] sensors

How to measure the robustness and reliability of the piezoelectric sensors and electronics in extreme conditions (i.e., cold temperature, high humidity, strong wind, ice, etc.)? Let's go on snow!

In collaboration with ATOMIC, Salzburg Research and the University of Salzburg, Joanneum Research MATERIALS had the opportunity to test the printed piezoelectric sensors, developed in the H2020 Smart2Go project and laminated onto the ATOMIC skis, directly on snow, at the Grosseck/Speiereck and Obertauern ski resort.



Figure 1 First field tests of the laminated printed PyzoFlex[®] sensors and electronics on skis

The goal of these preliminary tests is to develop a good setup for additional field measurements expected in winter 2021. Several runs with different techniques were performed and the data were recorded.

Helmut Holzer, Director for Anticipation & Advanced Research at ATOMIC, said *“The first field tests on snow were successful with good performances in terms of waterproofness and no failure of the sensors and electronics. The data acquisition was working well. These tests are important to identify points to be improved and to define the next steps, until the full integration of the components into the skis”*.

In [Smart2Go project](#), the PyzoFlex[®] sensor system provides the online measurement during skiing, while the required energy will be supplied by the Energy Supply Platform (ESP). The ESP includes energy storage and harvesting elements, electronics, and communication components, fully integrated into a miniaturized, flexible platform to be fully integrated into the skis. The ESP is developed in collaboration with the [Smart2go partners](#).

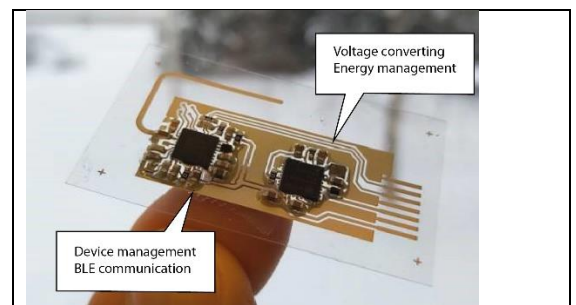


Figure 2 Smart2Go Energy Supply Platform developed by VTT Technical Research Centre of Finland

The aim of [DiMo project](#) is to provide motion data intelligence for applications under real conditions. In particular, the sensor system developed in Smart2Go is used for the measurement of various parameters and their biomechanical interpretation is provided to the users.

Both the projects will provide the users with relevant information concerning the skis' condition and performance feedback, with positive impact on the skier safety and on the product lifetime.



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