Author:	Alfred Binder, CTR AG, Austria
Title:	**Combined pressure, temperature and ID sensor**
Abstract:	Wireless sensor applications at elevated temperatures of around +200°C and above call for robust technologies such as surface acoustic wave (SAW) sensor designs. A combined pressure/temperature sensor with identification functionality has been developed based on a $LiNbO_3$ substrate for condition monitoring applications in industrial continuous ovens. Due to the given temperature specification and to avoid adhesives, the design of the sensor was conceived as a classical beam arrangement supported by three balls. The talk gives an overview on the design process of the sensor beginning with the mechanical simulation of the sensor and the derivation of the SAW delay line to measure pressure, temperature and to realize ID functionality. The main results are a pressure sensitivity of 3.7 rad/bar with a temperature drift of 0.013 rad/°C. The sensitivity of the pressure sensor is also temperature dependent. This compound temperature drift can be compensated with the inherent temperature information of sensor.