

## **ACOUSTICS2008/3600**

### **A new impedance sensor for wind instruments**

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Our aim was to build a low cost but accurate portable impedance sensor. The adopted technique is the one using a source with a back cavity. A first electret microphone on the front of the source measures the pressure at the input of the instrument weather a second one measures the pressure in the cavity, which is proportional to the volume flow supplied by the source. By choosing a sufficiently small sealed cavity and a small piezoelectric source the system do not exhibit any cut-off frequency in the measurement range. The calibration is then simplified and only few parameters are needed to model the three complex calibration functions. This calibration is performed with three non resonant calibration loads. Moreover, it is shown that the geometry of the sensor being known, the measurement with a rigid wall is sufficient to calibrate the sensor. Results show that it is possible to achieve a measurement with an accuracy lower than 1dB in the range 50-4000Hz.