



CCAUV/06-25

## **Metas, Laboratory of Acoustics and Vibration**

### **Short report for CCAUV, September 2006**

#### **Organisation**

The Federal Office of Metrology (METAS) - previously called "EAM, Eidgenössisches Amt für Messwesen" - is the National Metrology Institute of Switzerland. As such it realises and makes available internationally agreed units and standards at the accuracy required. It supervises the use of measuring instruments in the fields of commerce, traffic, public safety, health and environmental protection. It monitors the compliance to legal requirements by cantons and authorised bodies, as well as instructs and advises verification experts and verification agencies. Its services are available to researchers, industry and commerce.

Metas employs some 130 persons. The laboratory of acoustics and vibration is part of the division "Electricity, Chemistry, Traffic and Acoustics" and has a permanent staff of 2 persons.

#### **Responsibilities**

The acoustics laboratory has been active for several decades primarily with the following duties:

- Realisation of the primary standard for sound pressure
- Calibrations and verifications of microphones, sound level measuring instruments and acoustic calibrators
- Pattern evaluations and approvals of sound level meters
- Calibration and monitoring of measuring equipment in the field of audiometry
- Conformity testing of hearing aids
- Pattern evaluation of acoustic warning devices

Switzerland is currently implementing a new law ensuring the protection of persons against vibrations. Within this framework Metas is in charge to ensure sufficiently accurate measurements of vibrations in buildings. This has been one reason for us to set up a calibration laboratory for vibration measurements at Metas.

#### **Calibration and verification**

Within the scope of our measurement capabilities the laboratory of acoustics is providing a wide variety of services to a multitude of customers.

In 2005 our lab has performed 25 primary calibrations of microphones for customers and has carried out numerous other calibrations. We have issued close to 200 verification certificates for sound level meters. The demand for accurate acoustic measurements in Switzerland is, however, considerably higher.

Therefore, Metas supports 5 external verification laboratories: three in the field of audiometry and two for sound measurements. This metrological infrastructure - with Metas at its root - has made a total of 1300 verifications in 2005.

## **Research activities**

Due to the high demand for our current services by industry as well as our important role in legal metrology the personal resources have been subcritical to maintain large research projects in the past.

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The most important development project in recent times has been the implementation of our vibration laboratory. In this new facility we can currently calibrate accelerometers by the comparison method (according to ISO 16063-21). This laboratory is equipped with three different shakers which allow us to cover a frequency range from 0.5 Hz up to 10 kHz.

Within this development one important achievement has been the successful participation in the key comparison Euromet.AUV.V-K1 underpinning our CMC's in the field of vibration.

## **International cooperation**

Metas has participated in numerous working groups of the IEC (TC 29: WG 4, WG 5, WG 10, WG 17, WG 21) as well as ISO (TC 43) and is member of Euromet.