INDUSTRIALES RESEARCH MEETING 16

ROOM FLANKING SOUND TRANSMISSION ASSESSMENT USING A VIBRATION PROBE

GRUPO DE INVESTIGACIÓN EN INSTRUMENTACIÓN Y ACÚSTICA APLICADA

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Abstract

Most of airborne sound insulation test are performed according to certification standards, and only deal with sound pressure as a variable to estimate insulation. Besides, standards are aimed to provide direct path insulation, so one gets no idea regarding flanking paths. Without data from every path involved in sound transmission, a proper insulation designing stage can became mistaken and unfinished.

Goals

- Room surfaces vibration signal acquisiton method set-up and detailed description.
- Simplified airborne sound insulation model development.

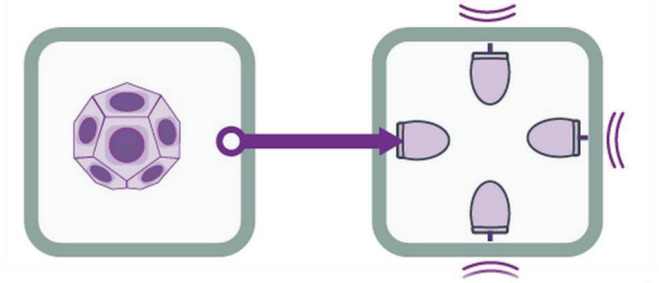

Figure 1. Tests layout: Airborne Emission, vibration recepetion

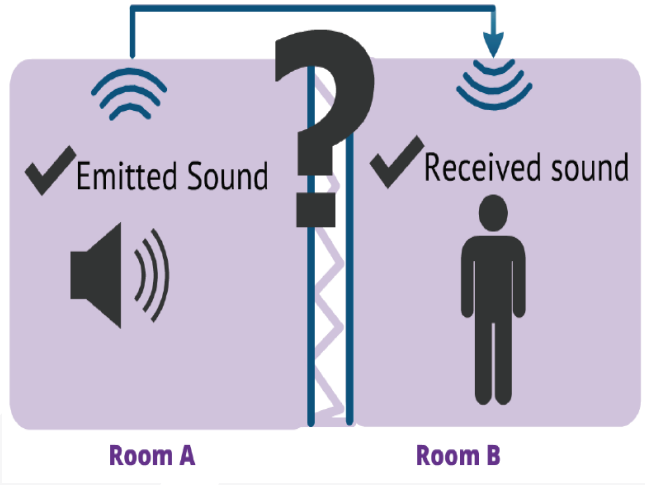

Figure 2. Concept sound transmission sketch.

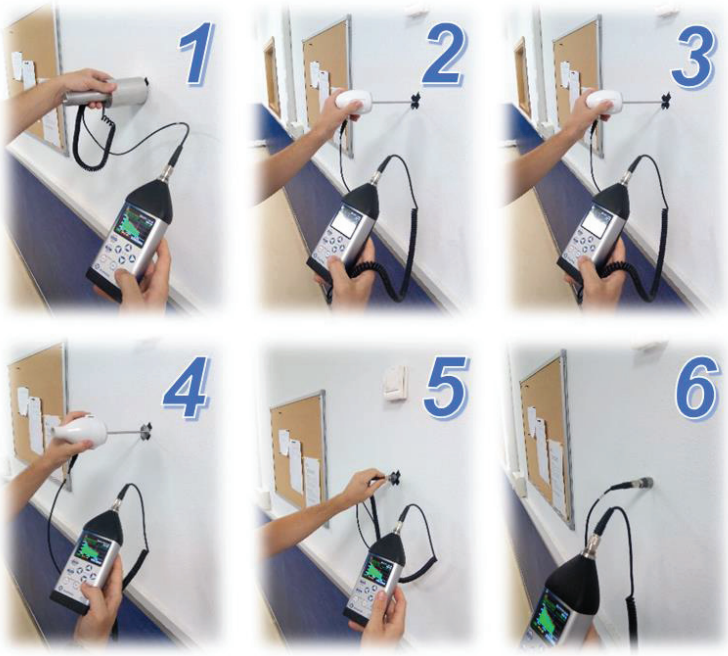

Figure 3. Measurements with different vibration probes

First tasks going on…

Focus is on vibration measurement on room surfaces to get information about flanking sound transmission. Working with accelerometers is usual, its mounting techniques are less obvious. The suggested method consists of performing vibration velocity level measurements, with a FFT analyzer, at the same time as a regular airborne sound insulation test is carried out. Then a surface weighted contribution model would let us know about the key room parts on sound proofing. Different room materials and probes are analyzed. It is prioritized a solution that lets one a fast, comfortable, and barely intrusive data acquisition.

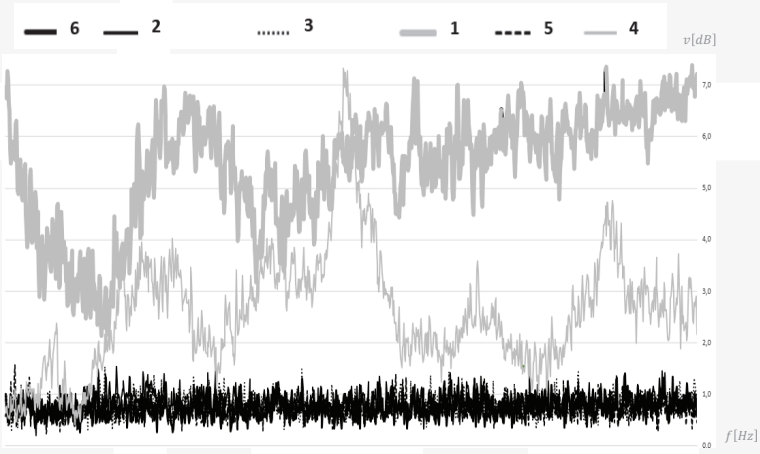

Figure 4. Different probes averaged standard deviation (σ (f)) .

…First conclusions coming out

- OPERATIONAL USE: Ease of use and time saving with probes; Better Intrusion and acces to difficult points.
- SIGNAL QUALITY: Velocity underestimation and SNR decrease; Reasonable standard deviations on tests.