ACOUSTICS2008/2257
Laboratory assessment of noise annoyance from large wind turbines

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An investigation of the annoyance from the wind turbine noise, to which neighbors may be exposed, is carried out. The aim is to obtain dose-response relationships and to uncover if specific noise components (e.g. low-frequencies) are primary contributors to the annoyance. In the experiments, sounds recorded close to large wind turbines are filtered (and levels adjusted accordingly) to represent indoor and outdoor positions at the neighbors' dwellings and played back in the laboratory. Challenges relating to the recording and transformation of sounds are discussed. The exposure technique is a combination of an advanced low-frequency chamber that can reproduce the frequency range 2-250 Hz (with uniform distribution in the room) and additional loudspeakers for the higher frequencies. The listening test is a randomized design. The stimuli, of 10 minute duration, are presented at three levels and in combinations of filtered versions (low- and mid-frequency) such that the influence of low-frequency tonal components and level fluctuations is investigated. 25 subjects are exposed to the stimuli while reading a novel and afterwards they rate annoyance on a visual analog scale.