Wind turbines noise measurements inside homes

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ABSTRACT
Wind energy is a primary source for achieving the objectives of the Oil Free Society. However, noise emission is often a significant problem encountered during wind turbines operation. Wind turbines noise generation is a complex phenomenon due to the effects of air interaction during the rotation of the blades. In this paper the noise measurements generated by the wind turbines inside some homes are reported. The wind turbines are installed on a flat area, at about 1000 meters above sea level, in a central area of the Apennines in Italy. The wind turbines (3 MW each) are located within a few hundred meters of the homes. Acoustic measurements were carried out with open windows for maximum disturbance condition and for different wind speeds and directions. The acoustic measurements were carried out when the towers were stopped and when they were in operation. In this way, the noise due to the operation of the wind towers was evaluated. The results of the incremental levels of the noise generated by the operation of the towers was measured to be an equivalent sound level (LeqA) of 20 dBA.

Keywords: wind turbines, noise, acoustic measurements.

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