



Infrasound is an ecologically harmful factor in wind energy

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Sources of infrasound in the wind energy are revealed. Features of general noise in the wind equipment (WE) are defined as sound radiation of its separate junctions. Sources of the sound are the following: the rotor of the wind turbine, machines and mechanisms placed in the WE small head, air cavities of the tower sections, fouling wind stream flowing around vanes of the wind turbine and interacting with their back edge and its turbulent boundary layer. Some WEs placed in the nearest vicinity from one another produce a general acoustic field around them, its features being defined by the noises from separate WEs and their interactions. The frequency range of WE acoustic radiation is rather wide. It contains the infrasound component (0 – 16Hz). The urgency of solving WE noise reducing problems, namely in the infrasound range, is beyond any doubt.

New methods for calculation of characteristics of acoustic fields produced by WE junctions are shown in this work. In particular, the methods of calculation of the noise pressure level in the far field of the wind propeller are applied to that of WE system the rotor of the wind turbine acoustic field. New methods for calculation of the acoustic medium resonance frequency in air cavities of the tower WE 500-C sections are offered. Appearance of non-linear waves in tower sections acoustic medium is investigated analytically. The program and the low-frequency WE acoustic waves measurement is developed. This allows recommending some noise level reducing means.