

The sound of wind power generation

How do wind turbines make sound?

Most of the sound generated by wind turbines is aerodynamic, caused by the movement of turbine blades through the air. There is also mechanical sound generated by the turbine itself. Overall sound levels depend on turbine design and wind speed.

What is wind turbine noise?

Wind turbine noise Noise generated from wind turbines are mainly of two types- mechanical and aerodynamic. Mechanical noise is generated from various machinery components in the wind turbine and is tonal in character.

Why is aerodynamic noise a dominant noise source in wind turbines?

This reduction has resulted in aerodynamic noise becoming a dominant noise source in wind turbines which is the center of focus in this paper. 3.2. Aerodynamic Noise Sources Aerodynamic noise is flow induced noise caused by interaction of flow structures with the blade wall.

Does atmospheric condition affect wind turbine noise propagation?

As a summary of the wind turbine noise propagation study, the influence of atmospheric condition for wind turbine noise propagation is listed below: Sound waves go through local upward and downward refracting regions, as a result of the wake deficit behind a wind turbine.

What causes wind turbine noise at 10 m/s?

At a wind speed of 10m/s, the wind turbine generated aerodynamic noise field is seen in Fig. 16. As shown in the figure, there is a high level of sound pressure generated at the rotor position. The propagation of wind turbine noise is influenced by the atmospheric turbulence as well as by the wake turbulence.

Do wind turbines have a noise signature influenced by atmospheric turbulence?

For wind turbines, self-noise mechanisms from blades and random turbulent inflow noise sources influenced by atmospheric turbulence are two major classes which contribute to overall noise signature. It has been found that these sources exhibit narrowband and broadband frequency characteristics.

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