Predicting the Influence of Surface Protuberance on the Aerodynamic Characteristics of a NACA 633-418 - DTU Orbit (02/11/2019)

**Predicting the Influence of Surface Protuberance on the Aerodynamic Characteristics of a NACA 633-418: Paper**

Leading Edge Roughness (LER) has become a critical challenge for wind turbine operators, often reducing the energy production of their turbines. LER has not yet been systematically categorized, and the transfer function between height/extent of roughness and the aerodynamic performance has not been established. A common method for emulating LER is to use zigzag tape or distributed sand grain roughness in a wind tunnel. This paper contains 2D and 3D CFD simulations and wind tunnel tests with zigzag tape on a NACA 633-418 airfoil, to evaluate the changes in aerodynamic characteristics. Because 3D CFD requires a vast amount of computing power, it is investigated if 2D simulation gives a sufficient level of accuracy.

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