An evaluation of several methods of determining the local angle of attack on wind turbine blades

Several methods of determining the angles of attack (AOAs) on wind turbine blades are discussed in this paper. A brief survey of the methods that have been used in the past are presented, and the advantages of each method are discussed relative to their application in the BEM theory. Data from existing as well as new full rotor CFD computations of the MEXICO rotor are used in this analysis. A more accurate estimation of the AOA is possible from 3D full rotor CFD computations, but when working with experimental data, pressure measurements and sectional forces are often the only data available. The aim of this work is to analyse the reliability of some of the simpler methods of estimating the 3D effective AOA compared some of the more rigorous CFD based methods.

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