Numerical Study of Wind Turbine Wake Modeling Based on a Actuator Surface Model - DTU Orbit (15/12/2018)

Numerical Study of Wind Turbine Wake Modeling Based on a Actuator Surface Model

In the Actuator Surface Model (ALM), the turbine blades are represented by porous surfaces of velocity and pressure discontinuities to model the action of lifting surfaces on the flow. The numerical simulation is implemented on FLUENT platform combined with N-S equations. This model is improved on the basis of actuator line model(ALM). By using ASM, the model of turbine can be simplified and the quantity of grids and computing time can be significantly reduced. A linear distribution model and a ASM Grid identification method are presented. This paper compares the ASM with ALM by computing both near and far wake of a Nibe A wind turbine, which combines wake velocity, turbulent intensity and vortex structure. Results show that ASM has better prediction accuracy and verify it's feasibility on numerical simulation of wind turbine wake.

General information
State: Published
Organisations: Department of Wind Energy, Fluid Mechanics, Hohai University, Chinese Academy of Sciences
Contributors: Zhou, H., Xu, C., Han, X. X., Shen, W. Z., Zhang, M., Chen, X. Y.
Number of pages: 6
Pages: 535-540
Publication date: 2017
Peer-reviewed: Yes

Publication information
Journal: Gongcheng Rewuli Xuebao
Volume: 38
Issue number: 3
ISSN (Print): 0253-231X
Ratings:
Scopus rating (2017): CiteScore 0.23
Scopus rating (2016): CiteScore 0.2
Scopus rating (2015): CiteScore 0.28
Scopus rating (2014): CiteScore 0.26
Scopus rating (2013): CiteScore 0.25
Scopus rating (2012): CiteScore 0.23
Scopus rating (2011): CiteScore 0.25
Original language: English
Electronic versions:
_.pdf
Source: FindIt
Source-ID: 2371424560
Research output: Research - peer-review › Journal article – Annual report year: 2017