

Wind Energ. Sci. Discuss., referee comment RC2  
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## **Comment on wes-2021-100**

Anonymous Referee #2

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Referee comment on "A computationally efficient engineering aerodynamic model for non-planar wind turbine rotors" by Ang Li et al., Wind Energ. Sci. Discuss.,  
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A well written and interesting paper about a fast rotor aerodynamic performance prediction method to simulate out of plane geometries. This is believed to contain a nice contribution to the field.

General comments:

Although the current paper already includes a significant amount of work, it could be recommended to study more operating points along the power curve (e.g. instead of focusing on different cone and dihedral shapes) to also investigate the effectiveness for these different conditions? If the application of this method truly lies in design and optimization it would be good to base the conclusions on more than a single operating point.

Along this line of recommendations also lies the application of this method to unsteady aerodynamic or aero-elastic phenomena, e.g. quantifying its impact on aerodynamic damping in turbulent inflow.

It is mentioned that the computational effort is similar to a BEM method. Can this be further quantified also in relation to the LL and CFD simulations?

Specific comments

2 p2 line 11/12 Can the authors supply a reference for this claim?

3 p6 line 17

The application of the vortex cylinder is mentioned for modeling yawed flow. Can the authors comment on the useability of the current implementation focusing on out of plane shapes for the modeling of yawed flow?

7.1 p24 What kind of  $C_{dax}$ ,  $a$  are we at? AOA? Some idea would be nice.

7.2.1 p25 Fig. 9. The authors rightly mention it would be difficult to draw conclusions based on the absolute loads plots and therefore proceed with a plot relative to the baseline case. Can the authors perhaps comment on the fact that the difference between the LL and BEM simulation for the baseline case is of a similar magnitude compared to the effect of dihedral?

7.2.2 p27 Line 9/10 Can the authors comment on the physics behind the observation of the impact of dihedral inboard of the start of the dihedral?

p32 Table 2 and 3 are perhaps better visualized in a line or bar plot??