

Wind Energ. Sci. Discuss., referee comment RC2  
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## **Comment on wes-2022-51**

Spyros Voutsinas (Referee)

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Referee comment on "Progress in the validation of rotor aerodynamic codes using field data" by Koen Boorsma et al., Wind Energ. Sci. Discuss.,  
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Indeed, this is a paper, so to say "long-due". It clarifies several issues regarding aerodynamic modeling of wind turbines and its level of confidence. To my opinion the paper provides valuable information in a concise way and I would strongly recommend its publication not exactly in its present form. There are a few points that to my opinion require some attention:

- In terms of modeling, it is mentioned that most CFD simulations were done in fully turbulent mode which leaves some doubt regarding the results. Please clarify this point
- To my opinion, the part that concerns the choice of data to be used in models that rely on look up tables (and these all except fully resolved CFD) is important. It was also the conclusion of the AVATAR project, that when non-CFD modelling is compared to CFD, the polars must be obtained from the CFD. In the present case the improvement was substantial, to a level that would suggest to specifically include it in the conclusions and why not in the abstract.
- With regard to Fig 2, I would recommend to add a figure comparing the BEM and FV as groups in the way done in Fig 6.
- In Fig 4 I noted that apparently there is good agreement regarding the placement of the stagnation point (this is not the case in the yawed cases). To my opinion this indicates that the flows produced by FV and CFD are similar which also seen in Fig 6 (it is said that FV and CFD agree better in terms of loads).
- The comment regarding the "poorer" grid independency trend compressible codes have in comparison to the incompressible ones, was also a conclusion drawn in AVATAR and was attributed to the pre-conditioning need in the compressible codes in low Ma conditions. The slope of convergence depended on the type of pre-conditioning
- Are all simulations in Fig 9 and 10 rigid or only the CFD ones? How do CFD and BEM results obtained with synthesized polars compare? Perhaps instead of adding the original BEM results to add the CFD ones in Fig 11.
- Although without any doubt CFD reproduces reality well, perhaps a point could be made as regards the quality over the inner region of the blade (in Fig 7 and 8 at the two inner sections the prediction of stall is not as good as in the axial case).