

Interactive comment on “Blind test comparison of the performance and wake flow between two in-line wind turbines exposed to different atmospheric inflow conditions” by Jan Bartl and Lars Sætran

Anonymous Referee #3

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The present study shows wind tunnel experiments using two in-line model wind turbines performed at the NTNU wind tunnel in Trondheim. The performances (power and thrust) of both turbines were examined and the velocity profiles in the first turbine's wake were measured. Experiments were conducted for different inflow conditions with increasing complexity and varying turbine distances.

Five different institutes predicted the results using numerical methods in a blind test comparison. Generally, it is of great relevance to have knowledge about the accuracy and performance of different codes. Further, as experiments and CFD simulations

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both have their drawbacks, validation becomes very important and with it the need for reliable databases. The manuscript is well structured and offers a good comparison of the different results. Few aspects should be addressed, which are listed below.

Major comments:

- The introduction starts out with describing the importance of wake modeling, an overview of existing models and an introduction to CFD methods, which is well structured. Next, an overview of full-scale and wind tunnel experiments is given and the first three blind tests are described. Here, I think it is important to a) show how this blind test differs from the first ones and b) close the loop from the blind tests to CFD methods in the end. In other words, strengthening the importance of validation between CFD and experiments, knowledge of code performance and suitable datasets would improve the introduction.

Minor comments:

- Sections 2.1.2 and 2.1.3 have the same title. This should be taken care of.
- P.7, l. 31: the last sentence of the page is confusing to me, please reformulate.
- P.11, l.13: if a sentence ends with an equation, I think you should include a period (throughout the manuscript).
- Fig. 6: As in Fig 5, I think one legend is enough, so you do not have to place the legend in Fig. 6(b) over the graph.
- P.14, l.14: 'seem' instead of 'seems'
- Fig. 7/8: I think one can make it clearer that each row corresponds to one distance (and which). It does say it in the caption; however, I think this can be presented more intuitively.
- p. 15 l.19: Referencing the respective figure when you start writing about the thrust would help the reader here

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- Same as above in l. 25
- You are inconsistent regarding British/American spelling in some cases, for example characteri(s/z)e, p.4, l.16 versus p.16 l.10. Please be consistent throughout the manuscript.
- P.16. l.2: so the wake measurements at 8.4D are influenced by the second turbine. Later in the manuscript, p. 17 l. 2, you mentioned additional

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