

wes-2022-1: Impacts of wind field characteristics and non-steady deterministic wind events on time varying main-bearing loads

Response to Reviewer 2

Dear Reviewer,

Thank you for taking the time to consider our paper, and for making valuable suggestions regarding how it might be improved. We include your comments below in **blue**, followed by our responses in **black**.

The publication is interesting, where looking at reduced order models for main bearing load estimation is something that could be used for various applications.

However, it would require a bit more elaboration on the turbine characteristics used, like mentioned by the previous referee.

Yes, we agree this would be useful for readers. We will provide a summary of turbine model information for the 5, 7.5 and 10 MW turbines.

P1. I.21 seems to have a typo, or at least reads a bit weird.

Yes, you are correct that this is a typo. It should read “in which the entire hub rotates about a stationary internal mounting with one or more main-bearings”. We will correct this.

P7. figure 2: figure 3 explains perfectly how you calculate the bearing loads, however from figure 2 it might be hard for readers to understand the visual difference. You refer to GE, which shows a very in depth figure, but maybe consider changing figure 2 to make it visually more understandable for readers who have not seen these configurations before (up to the author). I would also just make a 2nd figure of the centered support in figure 3 if I were you.

We will consider if any improvements can be made here regarding representation of the drivetrains. However, please note that in a long paper which already has a large number of figures we are trying to avoid adding more unless strictly necessary. In addition, please note that Fig 3 applies equally to both configurations depending on whether $L_h > L_b$ (overhung support) or $L_h = 0$ (centred support). Therefore, both are included here implicitly. We will add a note to the caption of Fig. 3 to make sure this point is clear.

P8. I. 220 Regarding the Equations , it is nice to mention that you assume static equilibrium, rather than dynamic equilibrium.

P15. figure 7,8: The legend size should be larger.

We will try and improve readability of the legends in these figures.

Your results section reads like a results & discussion. It seems this was intentional, but it is not mentioned. Either split these two up or change the title of the results section to results and discussion.

In our experience a results section will generally contain discussion as well. But, we will consider whether an altered section title might be helpful here.

The use of grids in figures can be nice. The paper and some sentences seem to be (perhaps excessively) long and could be shortened. Text becomes more understandable for readers when sentences are kept short. However, this should be up to the author.

These are all excellent points. We will consider whether grids in some figures can help the reader, while also avoiding those figures becoming too 'busy'. We will also review the paper in general, shortening sentences if possible.