

Wind Energ. Sci. Discuss., referee comment RC2
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Comment on wes-2021-42

Anonymous Referee #2

Referee comment on "Effect of individual blade pitch angle misalignment on the remaining useful life of wind turbines" by Matthias Saathoff et al., Wind Energ. Sci. Discuss., <https://doi.org/10.5194/wes-2021-42-RC2>, 2021

The authors present the effect of pitch misalignment on lifetime of components and annual energy production through aero-elastic simulations of an example wind turbine. They have used a data set from laser-optic pitch angle misalignment measurements to determine groups of level of misalignment and imbalance scenarios. The main content of the paper, however, are aero-elastic simulations of a S70 turbine with OpenFAST using the defined imbalance scenarios as input. The simulation results were post-processed to obtain remaining useful lifetime (RUL) of blade root, blade bolts, hub, rotor shaft, main frame, and tower base for the different imbalance scenarios, as well as annual energy production losses.

The paper is clearly written. It contains an appropriate literature review, results are presented and discussed well. The topic is of relevance for the wind industry as aerodynamic imbalance often occurs. The authors claim that their scientific novelty is the effect of pitch misalignment on RUL. Although the effect on RUL may not have been shown in scientific literature, the effect on loads has been discussed in several studies (as mentioned by the authors). Also the applied methods (aero-elastic simulations, RUL calculations) do not contain any novelty. The database of measured pitch misalignments is valuable, but the methodology for generating the database is neither validated nor does it play a significant role in the paper (only used for definition of imbalance scenarios).

At current stage, the content of this paper does not contain sufficient new scientific ideas, analyses, or data for a publication in WES. I recommend a major revision of the paper to improve the scientific relevance of the paper. Please also see further comments in the pdf.

Please also note the supplement to this comment:

<https://wes.copernicus.org/preprints/wes-2021-42/wes-2021-42-RC2-supplement.pdf>