

Interactive comment on “Benefits of sub-component over full-scale blade testing elaborated on a trailing edge bond line design validation” by Malo Rosemeier et al.

Malo Rosemeier et al.

malo.rosemeier@iwes.fraunhofer.de

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Thank you very much for taking the time to review our manuscript and giving us your feedback. In the following, please, find our responses (R) to your comments (C):

C “The paper only evaluates the traditional full-scale test, while more advanced methods are merely mentioned. The statement in the paper that the advanced methods only aim at minimizing over-loading of the structure is incorrect, the aim is to have a more correct loading.”

R The respective part in the introduction was rectified.

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- C “An in-depth comparison of the sub-component test to advanced full- scale testing methods like bi-axial, forced response tests is advised. In this it should be remembered that e.g. WMC in the Netherlands started with bi-axial testing already long time ago, but this was replaced by a uni-axial resonant fatigue test for practical reasons (time, money).”
- R We have added the comparison to resonant bi-axial blade testing to the paper. According to your advice we have added a sentence on forced response testing.
- C “An inherent drawback of a sub-component test is that the selection of the critical regions and its loading and the design of the component set-up need to be done using the design models. This seems in conflict with the certification objective of the full-scale test: ‘to validate the assumptions made in the design models’. How to repair this drawback? ”
- R FST also underlies the described drawback. The selection of critical regions is also done using the design model. The positions of load frames, for example, is decided based on the critical regions in the static test. The general idea behind the model validation by experiment is to bring your model iteratively closer to the boundaries of the experiment. At some point you need to predict the behavior of the specimen, the only thing you can do is to trust your model.
- C “In case a full-scale test would be replaced by sub-component tests, which seems the advice in the conclusions, how many components would then be needed to be tested? The DTU10MW example already identifies 2 regions of interest for lead-lag loading, but there will be more. Will there then still be a time benefit?”
- R The intention of this paper is not to give arguments that full-scale blade testing should be replaced by sub-component testing. The idea is to have a further intermediate level experimental method at hand to validate models under more realistic loading conditions. To eliminate misunderstandings, we have added a

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sentence to the introduction and some application case scenarios to the conclusions.

Please also note the supplement to this comment:

<https://www.wind-energ-sci-discuss.net/wes-2017-35/wes-2017-35-AC2-supplement.pdf>

Interactive comment on Wind Energ. Sci. Discuss., <https://doi.org/10.5194/wes-2017-35>, 2017.

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