

Interactive comment on “Assessment of a rotor blade extension retrofit as a supplement to the lifetime extension of wind turbines” by Malo Rosemeier and Matthias Saathoff

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We would like to thank the reviewers for their feedback. In the following, please, find our responses (R) to the reviewer comments (C):

C “It is not clear how [the authors] achieve the trade-off between the increased structural load due to RBE and the extension of wind turbine lifetime. ”

R The trade-off between increased load due to RBE (increase of blade length and decrease in fatigue budget) and LTE with the goal to maximize the energy yield is explained step-wise in chapter 4.5 and 4.6 by means of three scenarios. After a

C1

thorough review, we conclude that this way is the clearest to explain the trade-off.

C “The authors should explicitly demonstrate the novelty of their contribution. The authors should show the research gaps that exist in the literature in comparison to the main contribution of their work. For instance, what is the difference in the methodology proposed by Fischer and Shan, 2013 and what is proposed in this paper?”

R We added a sentence that explicitly highlights the novelty of this work with respect to the literature referred to in the introduction. Moreover, we slightly modified the paragraph (p.2, l.9) that concerns the work by Fischer and Shan, 2013 to express the difference to our work.

C “The only aspect which could benefit from an improvement is to explain more clearly the basis for the claim of the critical crack initiation in the TE adhesive bond. This is one of the most fundamental points which will restrict most of the later extension length limitation cases, limiting the possible length of the RBE. For example, was this claim based on a specific case/blade? Could it be transposed directly to the use case in this paper?”

R This aspect is addressed in the introduction (p.2, l.18). A reference is given to Rosemeier et al., 2020b, who found that tunneling cracks can be critical for a design because they can initiate early in the lifetime and may propagate into the blade structure. The respective sentence has been extended to address this more clearly. In general, tunneling cracks in the trailing edge can be critical for each blade type which is manufactured by adhesive bonding.

Please also note the supplement to this comment:

<https://www.wind-energ-sci-discuss.net/wes-2019-110/wes-2019-110-AC1-supplement.pdf>

