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Interactive comment on "Virtual full-scale testing for investigating strength characteristics of a composite wind turbine blade" *by* Can Muyan and Demirkan Coker

Xiao Chen (Referee)

xiac@dtu.dk

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1. In essence, this work presented FE simulations of a 5-m full-scale blade subject to static loads using nonlinear puck failure criterion. Instead of using 'virtual full-scale testing', it is more suitable to use 'FE simulations' to reflect the essence of this work. To the reviewer, 'virtual testing' is more than FE simulations. 2. In the abstract, 'so that the physical basis of the progressive damage development can be captured and interpreted correctly.' should change to 'so that the physical basis of the progressive damage development can be better interpreted and understood'. Physical tests capture real damages while FE simulations hopefully can complement ex-

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perimental observations to achieve better understanding. You may consider to read https://doi.org/10.1016/j.compstruct.2019.03.018

3. The big blades behave/fail differently from the smaller ones. Two studies listed below showed that the governing failure mechanisms are quite different. How the results from this study using a 5-m blade FE model are relevant to the blades which are usually more than 10 times longer? Please comment on this. https://doi.org/10.1007/s11431-014-5741-8 and https://doi.org/10.3390/en7042274

4. In Chen et al. (2017), 3D stresses/strains are found to be important in the failure of a 52.3m blade and solid elements are recommended in FE simulation when the failure is of concern. Please comment on the shell elements used in this study and maybe state the scope of this study in the introduction.

5. In Fig. 4, it seems that the stress-strain curves are rather linear. How can one see that the nonlinear Puck material damage model used in this study is superior to other models, even to the linear ones?

6. In Fig. 4, please also show the comparison when the other models are used, e.g., the normal Puck, Tsai-Wu, etc.

7. In Fig. 10 and the other similar figures, please compare when the other models are used, e.g., the normal Puck, Tsai-Wu, etc. Modern FE software provide the built-in composite damage models for shell elements, please include the comparison in relevant curves.

8. In Fig. 12 (d), why there is considerable damage at the blade tip, which is usually not loaded.

9. in Fig. 15(d), why there is an undamaged region (blue) enclosed by the damaged region (red)?

10.In Fig. 16 and other similar figures, please also show what is happening in the blade model at the turning points, is it due to local or global buckling?

11. In Fig. 19(c) and 19(d), why do the damaged regions heal? It is better to show the damage status rather than the Puck index. Like the one used in https://doi.org/10.3390/en7042274

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