

Wind Energ. Sci. Discuss., referee comment RC2
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Comment on wes-2021-1

Vasilis A. Riziotis (Referee)

Referee comment on "Active flap control with the trailing edge flap hinge moment as a sensor: using it to estimate local blade inflow conditions and to reduce extreme blade loads and deflections" by Sebastian Perez-Becker et al., Wind Energ. Sci. Discuss., <https://doi.org/10.5194/wes-2021-1-RC2>, 2021

The paper proposes and assesses an active TE flap control strategy which uses the flap hinge moment as sensor for estimating the local inflow velocity. The authors employed and enhanced an existing linear aerodynamic model for the calculation of the hinge moment of an airfoil with a moving flap that undergoes pitching and heaving motion. Using this model they developed a model based inflow estimator model which provides effective wind velocity and angle of attack seen by a blade section. Furthermore, they developed and tested a TE flap control strategy that mitigates extreme loads due to extreme turbulence. Preliminary results from the application of the method seem to be very promising. Moreover, in their text the authors discuss in detail pros and cons of the proposed strategy as it is yet at an early stage of development.

The paper is well structured and very well documented. Furthermore the work presented in the paper is complete, novel while it is substantiated that the proposed concept works well. Given all the above I recommend publication of the paper with some minor revision.

My main comment is that some further explanation is needed with regard to the way that the 2D sectional unsteady aerodynamic model has been transferred to the 3D deforming blade case. See comment in 3.2 in the attached pdf.

My comments/corrections are detailed in the supplement pdf file.

Please also note the supplement to this comment:

<https://wes.copernicus.org/preprints/wes-2021-1/wes-2021-1-RC2-supplement.pdf>