

# ***Interactive comment on “Extending the life of wind turbine blade leading edges by reducing the tip speed during extreme precipitation events” by Jakob I. Bech et al.***

**i. zidan (Referee)**

zidanifh@aston.ac.uk

Received and published: 14 March 2018

Wind power industry has been growing fast in the recent years. In my opinion, this manuscript has introduced a topic which is related to the journal scope. This manuscript discussed the topic in a good way and deserves to be published after some revisions:

1. The nomenclature is missing. Please add a complete nomenclature.
2. Line 23: “LEE is caused by a multitude of factors within the atmospheric environment and the leading-edge structure”. Please Change this into “LEE is caused by a multitude

[Printer-friendly version](#)

[Discussion paper](#)



of factors within the atmospheric environment such as sand particles which intensively discussed in Zidane et al., 2017 and other airborne particles". Zidane, I. F., Saqr, K. M., Swadener, G., Ma, X., and Shehadeh, M. F.: Computational Fluid Dynamics Study of Dusty Air Flow over NACA 63415 Airfoil for Wind Turbine, Jurnal Teknologi, 70, 1-6, DOI: <http://dx.doi.org/10.11113/jt.v79.11877>, 2017.

3. More literature survey is to be added to present the most updated R&D status for further justification of the originality of the manuscript.

4. Please change the subtitle number 3.2 Analysis of rain erosion test data into 3.1 Analysis of rain erosion test data.

5. Line 23: Please provide an explanation why did you choose the falling velocity of the droplet to be 6 m/s.

6. Page 6 line 8: "as the damage progresses from an area of high velocity towards areas with lower velocity." Could you explain why this happens.

7. Page 7: Please figure 2, 3,4 and 5 should be 3, 4, 5 and 6.

8. Page 11 line 8: To account for variable conditions fatigue loading, different rules have been proposed for accumulation of damage in composites (Brøndsted et al. 1997). The most popular and easy to use, though not always correct, is the linear Palmgren-Miner rule. Could you explain how it is not always correct or the limitation of this rule? Also, how were you assured that it has worked in your presented study.

9. Page 17 line 7: "The higher the surface roughness, the thicker the boundary layer and the more reduction of the aerodynamic performance". It is better to replace this line with the following: "The drag coefficient of the airfoil increases, while the lift coefficient decreases especially at higher angles of attack causing severe losses in energy production".

10. Page 18 line 24: tables 3 to 7 not 4 to 8.

[Printer-friendly version](#)[Discussion paper](#)

11. Please state that AEP refers to annual energy production in section 5.2 as it is not mentioned.

12. Adjust the figure numbering starting from figure 15 until the end.

13. Please merge the results and discussion sections.

14. Page 19 line 5: Please adjust the table numbers.

15. It is recommended to have one paragraph for the Conclusion.

---

Interactive comment on Wind Energ. Sci. Discuss., <https://doi.org/10.5194/wes-2017-62>, 2018.

[Printer-friendly version](#)

[Discussion paper](#)

