

RC2: 'Comment on wes-2024-35', Anonymous Referee #2, 23 Apr 2024

- Line 1: typo (TI)can -> (TI) can.
 - Fixed
- Line 5: Erosion and roughness are closely related and sometimes their meanings are mixed up. In the abstract, please specify clearly why erosion is represented in this study with different roughness values.
 - The abstract has been updated as has the opening sentence of Section 2.2
- Line 20: energy losses of 7% (if it is AEP, please specify it).
 - Fixed
- Line 30: strategiesBadihià strategies Badihi
 - Removed sentence due to updated introduction
- Line 30: (2022)Gonzalez -> (2022) Gonzalez
 - Fixed
- Line 30: The sentence “ the lack of insight limits the potential benefits of quantifying APE loss” is difficult to understand, please rewrite it.
 - Removed sentence due to updated introduction
- Line 35: “ protection (LEP) and aerofoils more robust towards the effects of erosion” please give previous examples and references for LEP and robust airfoils.
 - The following reference has been added to the paper at a different section: Bak C, Anderson P, Madsen HA, Gaunaa M, Fuglsang P, Bove S, Design and Verification of Airfoils Resistant to Surface Contamination and Turbulence Intensity, Conference: 26th AIAA Applied Aerodynamics Conference, August 2008, DOI: 10.2514/6.2008-7050
- Section 2.2. Please in this section it is necessary to specify the % of blade in which roughness is considered. It is 15% but can be found in subsequent sections.
 - Wording improved to clarify
- Line 79: it is mentioned that the NACA airfoil used in Krog Kruse experiments it is not the same as the one in the HAWC2 model. Please specify if in the computations presented in the paper the airfoil used in the outer part of the blade is the NACA one or the one in the confidential wind turbine model.
 - Very good point. It has now been reworded to clarify that it was the original proprietary aerofoil to which the factors have been applied, rather than replacement with an alternative aerofoil.
- Line 87: please improve the explanation of the derived factors. If they are used in the airfoil coming from the HAWC2 model it is not very clear specified.
 - Section 2.2 improved to clarify this point
- Line 94: please specify what is the ‘plate behaviour’
 - Text updated with explanation of meaning

- In Section 2.2 it is not clear whether the control system will be activated during all the simulations performed in this work. That is, describe if the control system detects that the power production is not achieved due to the affected airfoils will make any actions and mitigations.
 - [Section rewritten to clarify](#)
- Line 169: 'with imposed wind shear conditions' : please explain which are these conditions.
 - [Updated text.](#)
- Figure 8: it is difficult to compare since the lines are in top of each other in 2 groups. Maybe a table or separating in different figures for each TI could help. The question that should be answered in this figure is: for all the TI studied the % of power loss is similar or depends on the TI value?
 - [Improved this graph as well as numerous others. Where highlighting a trend we have enhanced the graphs using colour variations to achieve this.](#)
- Line 213: the sentence ' averaging effect of time averaging' is a bit confusing for the reader. Please rewrite it.
 - [Corrected](#)
- Figure 9 caption: change -> Change
 - [Corrected](#)
- Figure 9: all the cases for P40 are computed for different TI, but the reference is always clean and TI 6%: is this consistent?
 - [Doublechecked for consistency](#)
- Figure 12: In the legend 'Clean 6% TI' appears twice, please specify the difference between them in the text and in the legend.
 - [Corrected](#)
- Line 272: It is suggested that the unexpected behavior detected for certain turbulence conditions that is presented in Table 1 is removed for the study. Once it is clarified it could be presented in future works.
 - [Corrected. Turbulence of 20 and 25% are not representative of offshore conditions and have been removed from all data tables.](#)
- Table 1 caption: ' the same profile' -> it is not clear which profile
 - [Caption improved](#)
- Table 1 and Table 2 captions: please include the velocity in this case to be consistent with Tables 3-4-5
 - [Updated](#)
- Line 398: these factors and these aspects appear several times in the paragraph.
 - [Corrected](#)
- Conclusions section: In line 409 it is said that the impact of blade erosion was less significant and right after, 'Blade roughness can significantly affect power-production' Even though it is ok, do not write them so close because is a bit confusing.
 - [Good point. Section re-worded.](#)

- Please review the whole conclusions section, it is very schematic.
 - [Entire conclusion reworked](#)
- Competing interest sentence: the word 'by' appears twice and is a typo.
 - [Corrected](#)