

wes-2023-167 Submitted on 07 Dec 2023

Review submitted on the 23.06.2024 for the submitted work with title:

Non-proportionality analysis of multiaxial fatigue stress histories in trailing edge adhesive joints of wind turbine rotor blades

The submitted work has some minor and major deficiencies which must be clarified before considering it for publication:

1. Abstract line 2-3: Beside all the mentioned causes, blades are loaded in fatigue majorly from their revolution and the change direction of their dead weight

2. l 39 lead-leg

3. l 57 appraoch

4. l 79 The blades were chosen as the first two (improve language)

5. l 110 which product? There is a noun missing.

6. The document does not adhere to a standard paper format, mixing different parts. Thus, segments of Chapter 3 should be included in the introduction, while the mathematical analysis should be placed under the Methodology section.

Moreover, the introductory paragraph seems misleading, as it does not accurately convey the paper's focus. The paper's essence is not about the importance of non-proportionality on the material level, which is majorly discussed in the intro; instead, it focuses on the non-proportionality of wind turbine blades and derives an equivalent value for their life span. Thus, the intro must focus on state-of-the-art research on the latest topic.

Additionally, it is used to add the motivation at the end of the introductory paragraph so the reader can follow what the research is about.

Thus, a major restructuring is recommended for chapters 1, 2, and 3.

7. Estimating the manufacturing-induced residual stresses is essential for the bond line stress analysis. Neglecting them will result in erroneous assumptions and conclusions, diverging from the material performance in the real structure and adding complexity which can be misleading.

8. Figure 7. The results of the finite element (FE) analysis should be interpreted with caution. Using the boundary elements of the bond line for stress analysis might affect the conclusions, as the stresses in these regions do not converge with a finer mesh. To implement the results accurately, a few rows of elements should be discarded. Similar cases can be found in the literature.

9. To the reviewer's knowledge, there is no literature evidence that the trailing edge adhesive cracks develop in an inclined plane other than the one transverse to the blade length. It is recommended to include photographic evidence or references that demonstrate a maximum stress plane different from the transverse plane.