Peer Review Report

Title: Added value of site load measurements in probabilistic lifetime extension: a Lilligrund case study

Summary

The revised manuscript addresses several of my previous comments and shows meaningful improvement in clarity and structure. The addition of Figure 1 and clearer scenario definitions significantly enhance readability. The methodology section is more transparent, and references to standards (DNV-ST-0262) and previous work have been included. Language and grammar have improved noticeably.

Strengths of Revision

- Scenarios are now clearly introduced and summarized in a flowchart.
- Aeroelastic model description expanded; digital twin concept clarified.
- Added relevant standards and improved overall readability.

Remaining Issues

The paper has improved substantially in clarity and completeness of discussion, but technical depth remains limited in some areas. I recommend minor revision focusing on:

- **Assessment of the Frandsen based results**: The lifetime extension assessment using the Frandsen model is strongly influenced by the performance of the generic aeroelastic simulation model. Therefore, the statement that Frandsen yields conservative results may mean one of the following:
    - It appears conservative **despite the aeroelastic model underestimating loads in freestream conditions**.
    - It appears conservative **partly because the aeroelastic model overestimates loads in freestream conditions**.
    - **Only if the aeroelastic model perfectly matches measurements in freestream conditions** can conservativeness be attributed solely to the Frandsen turbulence estimation.

  Clarifying this would improve the conclusions made in the article.
- **Validation representation:** box plots or summary statistics (at least for plots A1 and B1) would improve credibility and understanding of the aeroelastic model performance (instead of or in addition to these point clouds)
- **Figure 3:** Turbulence measure clarification needed: Is Turbulence given as standard deviation (m/s) of the wind speed for 10-min bins?