

Review

General Comments

The authors should be commended for the work displayed in this manuscript. The relevance to the field of wind energy is substantial. First, given the scale of the bearings used in the study and the due diligence undertaken to match the operating conditions of a reference turbine. Second, the particular focus towards discussing the results by tracing back to previous research conducted on smaller bearings is useful and practical contribution to the field. And ultimately, the level of openness in clarifying the methodology, and experimental details involved. Furthermore, the presentation of the results and the images is clear, and the text is of good quality. Some minor suggestions are listed below under specific comments.

Specific comments

- One of the main findings stated in the abstract is the non-existence of “wear limits”. This statement should be conditioned, at the very least, by the lubricant formulation employed. Since, apparently, the lubricant can't be fully disclosed, a reference to “a current fully formulated commercial grease” should suffice. On the same note, any further clarification on the lubricant, base oil type, thickener concentration or additive package would go a long way in making the research replicable. The lubricant formulation is expected to shift these margins and likely also influences the effectiveness of the so called “protection runs”. A different additive package might require less time to form tribo-layers, changing the impact of frequency effects, for example. Alternatively, a base oil with a different chemistry may have a similar viscosity but different surface wetting properties which might also affect the impact of frequency.
- $x/2b$ value is used in the main parameter table but is seldom used elsewhere when referring to the tests. I would encourage authors to add the $x/2b$ value alongside the angle as it is referenced in the text. Makes for a much easier read, rather than having to move back and forth back to the table. It would also be particularly useful in communicating the amplitudes of the protection runs.
- All wear mark figures are missing a reference scale length. Considering that there is no quantification of wear other than optical imagery, I think it would be quite relevant to add these. In figure 6, for instance, it is difficult to assess whether each of the two images are scaled identically.
- In Figure 7: The bearing torque appears quite strange even at 1000 cycles, which is the lowest cycle count in this figure. With a horizontal offset at the 0-torque horizontal line. I may be mistaken, but what would be expected is either parallelogram friction torque loops; such as the ones reported later in Figure 9 or a pre-rolling narrow diagonal slit. I find that the lack of an explanation on the shape in figure 7, combined with the lack of a healthy bearing torque loop at 1-10 cycles, negatively impact the clarity. Is this a product of backlash? It seems to be less apparent in figure 9, which suggests that this is the case. My suggestion here would be to address this in the text such that the reader is able to discern whether this is a product of the friction in the bearing, a result of the experimental setup or else.
- Building on the last point, discussion of “inertial forces” in line 229 suggests that the authors are not removing the acceleration torques from the curves reported as friction torques. This might explain the why some of the torque loops look odd, at least partially. It is also important to note for the implications of interpretation of figure 9. Clarification on whether the torques reported are indeed the direct sensor feed, or alternatively, have been processed to remove inertial effects would be a welcomed improvement in terms of clarity.

Technical Corrections:

- Line 124: “A torque measurement is mounted to the pinion shaft”. This sentence should be completed, for example: A torque measuring device is mounted to the pinion shaft.
- Line 247: “Test ID V fits perfectly and supports the statement, that wear severity decreases with higher amplitudes. The test with the smallest amplitude diverges. It has a slightly lower characteristic.” I do not understand what is being said here: “slightly lower characteristic”? I am almost certain that the idea being communicated is that it has less pronounced wear but it should be rewritten for clarity.
- Line 244: “It was also confirmed for high $x/2b$ ratios by Schwack et al., that have seen similar (Schwack et al., 2020).” Consider revising the writing of this sentence, “that have seen similar phenomena”, or trends, for example.