WIND ENERGY SCIENCE DISCUSSIONS

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Interactive comment

Interactive comment on "A review of wind turbine main-bearings: design, operation, modelling, damage mechanisms and fault detection" *by* Edward Hart et al.

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In general the quality of the review is not adequate in many aspects and in some cases lacks accuracy and up to date information on state of art. It is recommended that the authors to revisit the content of the this article and ensure review is based on the most update information referencing to recent advancement in design ,diagnostic and manufacturing of the main bearing. As such find below some specific comments :

âĂć Section 3.2 : it is not clear how the equation (6) and (5) are derived given the illustration in figure 2. It is more appropriate to use the standard GL coordinate system which is common in this industry and then explain the hub loading . âĂć Section 4.1:

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Discussion paper

The most important drawbacks of using integrated drivetrain (figure 6C) is the lack of ability to exchange main bearing independent of nacelle in event of failure ; i.e if the main bearing fails then the entire nacelle needs to be exchange hence the high cost of repair particularly in offshore environment. It is recommended that the author carry out through an accurate comparison between different platform design with view on maintainability . âĂć Section 6.1 paragraph 10 : Please note , the main bearing on modern DD turbine ,e.g SGRE D6 platform , is grease lubricated and employs quite advance and sophisticated grease pumping system . Also at least for the past 7-8 years no manual greasing of main bearings is being conducted but using auto –greaser or automatic grease pumps. Please revisit the statement in this section and ensure it reflects the current practice . âĂć Section 6.2 : It is recommended that the author to review the damage related to material and manufacturing of the bearings ;i.e sub case and sub-surface cracks. This is very common type of main bearing failure particularly in larger offshore machines. âĂć Section 8 paragraph 20 : AE is not a common method to monitor bearing or at least not main bearing in wind industry. The main bearing is a large structure and AE signals are very susceptible to attenuation particularly across large transmission path and hence measuring signals from the bearing casing will not yield into meaningful information. As a general comments main bearing failures are among the most straightforward and is easily detectable through motioning of ball pass frequency across the spectra . This is easily detected through available commercial condition monitoring system in turbine and generally 5-7 months in advance of turbine shut down .

Interactive comment on Wind Energ. Sci. Discuss., https://doi.org/10.5194/wes-2019-25, 2019.