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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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The article should probably state somewhere that it is largely limited to studying rolling element bearings. I say this because using plain bearing(s) as the main bearing in a wind turbine is also an active area of work, but they are not discussed here. The sections of the current article that are applicable to each is the applied loads. Another choice is to expand the scope of the paper and include this emerging plain bearing work.

Regarding the discussion in Section 1 on failure rates, another source for main bearing failure rates in the U.S. is Dan Brake of NextEra Energy's presentation -

Brake, D. (April 2013). "WTG SRB Main Bearing Failures." Presented at the 2013 UVIG Wind Turbine/Plant Operations & Maintenance Users Group Meeting. This source is not publicly-available though, so an alternate reference is from NREL at https://www.nrel.gov/docs/fy15osti/64311.pdf. A more recent, but less technical reference, is available at https://www.powermag.com/extending-turbine-life-to-meet-wind-powers-potential/.

In Section 3, I'm not sure I'd entirely agree with the statement that "The principal role performed by the MB is that of supporting the rotor while reacting non-torque loads, preventing them being transmitted further down the drivetrain." This depends on the type of the bearing (SRB, CRB, TRB) and the number of supports (three or four-point). The statement is true for a TRB in a 3-point drivetrain or a 4-point, but not an SRB in a 3-point. Here, the rotor moments are really reacted by corresponding support forces from the gearbox and mounts. This is backed up by the statement in Section 4.3 that "SRBs cannot support moment loads in either single or double-row configurations (Harris and Kotzalas, 2007)."

In Section 4, I suppose it could be added that GE is also essentially committing to DD technology for offshore machines with the Haliade and Haliade-X, moving up this mention from 4.2 into 4.

In Section 4.3, I would recommend to change "...WTMBs generally consist of two or more individual bearing units..." to "...WTMBs generally consist of two or more individual bearing rows..."

In Section 5.2, you could probably also mention Timken's Syber (https://www.timken.com/resources/high-performance-srb-technical-white-paper/)

In Section 5.3, I would say "Various forms of commercially-available FEM software are available..." distinguishing from the privately-held SKF, Schaeffler, and Timken software mentioned earlier.

In Section 6.1, I would say "...resulting in increased friction and wear."

In Section 8, it appears temperature monitoring is not mentioned until much later in the paragraph. This is a common and successful technique of main bearing fault diagnosis. I will also admit that I'm not entirely sure this section of the paper is needed. Although related to the main body of work, I would vote for expanding other portions of the review and eliminating this.

Generally speaking, this review does miss some important recent work such as at NTNU, RWTH-Aachen, and the bearing manufacturers. Several examples can be found at the Conference for Wind Power Drives in 2017 and 2019 or TORQUE 2018. So, in Section 9 I'm not quite sure I'd say "It is clear that the MB has been neglected in terms of...research focus". "Neglected" as a research focus may be a bit stronger than warranted.

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