

Wind Energ. Sci. Discuss., referee comment RC1
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Comment on wes-2021-63

Anonymous Referee #1

Referee comment on "Wind turbine drivetrains: state-of-the-art technologies and future development trends" by Amir R. Nejad et al., Wind Energ. Sci. Discuss., <https://doi.org/10.5194/wes-2021-63-RC1>, 2021

This is a useful review paper covering the different elements of the wind turbine drive train, including condition monitoring. It is reasonably structured, although the modelling and analysis section (2.5) really only applies to the gearbox. As such it could be moved into section 2.2.

Some text corrections/clarifications are required:

p5 line 9 - should "epicyclic systems" be stages ?

2.2 This section is missing important discussion of gearbox casing distortion under load, and the influence on gear and bearing loading

p6 line 7 "It aims to achieve a trade-off between generator size and maintenance effort." - unclear

p6 line 27 should this be simply generators ? not specifically PM machines

p6 line 32 compensating gearbox reliability needs to be mentioned to provide the correct context

p7 line 11 speed should be shaft speed

p8 line 3 power should be converter with power

p8 line 16 the nature of the energy storage should be mentioned

p8 line 20 the term "rotating" is unclear

p9 line 2 the term "grid-supporting mode control" needs to be more fully described and converter topology referenced

p9 line 7 an outline description referencing converter topology and control is required for grid-forming mode control

p9 line 14 "converter choice of cooling system" needs to be rephrased

p12 lines 21 to 25 seems to be written assuming offshore wind - onshore and offshore O&M costs should be distinguished

p13 line 8 'sampled' is misleading - the sampling rate is generally much higher with averaged results saved every 10 minutes

Section 3.1.1 changes to power curves is a powerful method for identifying insipient faults - Gaussian Process models have recently been found to be very effective at this. This emerging approach should be discussed and referenced

p20 line 15 spar support structures are reasonably rigid, this conclusion will not apply to all floating wind - this should be made clear

p20 line 25 "plant" should be wind farm

p20 line 27 the term wake steering needs to be explained and its pros and cons discussed