

Interactive comment on “Comparison of Planetary Bearing Load-Sharing Characteristics in Wind Turbine Gearboxes” by Jonathan Keller et al.

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This paper deals with modelling, design and extensive experimental model validation of gearboxes and gearbox loads. These models are then also used to calculate expected lifetime. This topic is very relevant because wind turbine gearboxes still fail too often, and often do not reach the design lifetime. Apparently our understanding of gearbox design is still insufficient, Therefore experimental work to check and improve models makes a lot of sense. The paper introduces its contribution in a proper way by giving an overview of previous research on this topic.

As a reviewer with a background in electrical engineering, I would like the authors to comment on the following questions:

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1 The gearbox used in this paper was originally designed for a 750 kW wind turbine that was probably introduced about 20 years ago. Current wind turbines have torques that are more than an order of magnitude larger. What does this mean for the relevance of the paper? How do these effects scale? How has gearbox technology (gears and bearings) developed since then?

2 To me, it looks like the correlation between measurements and models is reasonable, but not excellent, while the authors characterize the correlation as good. Does it make sense to comment on the reasons for these differences? Does this mean that models should be further improved? Or does this mainly caused by manufacturing inaccuracies so that it does not make sense to try to improve models?

3 Cylindrical Roller Bearings with clearance and Tapered Roller Bearings with preload are compared, and it is concluded that TRB with preload result in a significantly longer lifetime. Does preload lead to a reduction in efficiency? Can I conclude from the temperature measurements that there is no increase in losses?

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