

Interactive comment on “Reducing cost uncertainty in the drivetrain design decision with a focus on the operational phase” by Freia Harzendorf et al.

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This article compares the unplanned maintenance cost of 5 different drivetrain technologies for 3 MW, land-based turbines. The paper is well written and topic is of interest. Here are some specific comments and suggestions:

-The comparison will be more interesting if the cost of unplanned maintenance together with the probability of its occurrence are presented. Please comment on the probability of occurrence of unplanned maintenance for each concept over the life span.

-It would be interesting to mention the share of such operational cost in the total cost

C1

(what portion of OPEX and what portion of CAPEX+OPEX). What is the CAPEX cost for each drivetrain concept? Literature review can be extended, in particular looking at relevant literature addressing total cost of drivetrain or over the life cycle (not only operation) - see for instance this <https://doi.org/10.1002/we.2499> for drivetrains on offshore turbines.

-Fig. 4: please comment on market share each concept has and what are their CAPEX estimates.

-Fig 6: there is a point between year 2-4 where the mean value becomes almost steady and constant for most of the concepts, please provide explanation. It would be nice to have the mean and standard deviation figures together.

-Page 14: “Despite the higher effort for their generator and converter designs they are superior as they can operate without a gearbox”. “As the EESG investment is more expensive and heavier than the PMSG for the same application, a direct drive with a PMSG is the winner in this comparison.” Comprehensive comparison of different designs is not the scope of this paper, therefore such these statements seems to be too general.

-There are some typos, e.g. in duction instead of induction, and some grammar mistakes which needed more careful proofreading.

-The definition of variables in eqs must be improved. The variable (a) is not defined in eq. 1. It is also not explained why s, j and d are taking those values. I assume “a” in figures 4 and 6 refers to annual.

-It would be interesting if the authors could comment the same study on different power ranges.

-The concept stated by the statement “Having included component specific mass and cost makes this approach scalable in rated power and rotor diameter.” In lines 137 and 138 needs more elaboration and justification.

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