Wind Energ. Sci. Discuss.,
https://doi.org/10.5194/wes-2019-28-RC1, 2019

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Interactive comment on "Optimal relationship between power and design driving loads for wind turbine rotors using 1D models" *by* Kenneth Loenbaek et al.

Anonymous Referee #1

Received and published: 21 September 2019

In general, the authors present an interesting topic with relevant results to the wind energy research community, and I enjoyed reading it. For instance, I like the theory part where the classical momentum theory expressions are used to find the optimal relationship between the aerodynamic power, thrust loading, and size of a wind turbine rotor. However, I have some minor comments that, in my opinion, might lead to an improvement of the overall paper quality. Therefore, I believe the paper merits publication in Wind Energy Science journal.

Minor Comments:

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Discussion paper

1.) There are several grammar errors here and there. I suggest a second reading using good grammar corrector.

2.) The introduction needs some revision to include more related works.

3.) The authors assumed that the change in CT does not lead to a proportional change in CP. Can the authors elaborate more on this assumption.

4.) The self-weight of the turbine is not taken into account in this study, the authors need to make this point clear in the manuscript including its impact on the general assumption used in the theory sections.

5.) The 1D-aerodynamic-momentum theory is considered as a first-order theory, the authors need to discuss broadly the benefit/shortcoming of using this theory instead for example using the Blade Element Momentum theory in the rotor design.

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