Wind Energ. Sci. Discuss.,
https://doi.org/10.5194/wes-2020-99-RC1, 2020

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Interactive comment on "A Method for Preliminary Rotor Design – Part 2: Wind Turbine Rotor Optimization with Radial Independence" *by* Kenneth Loenbaek et al.

Anonymous Referee #1

Received and published: 3 November 2020

In the paper, the potentiality for load-constrained optimization of horizontal-axis wind turbines (HAWTs) of the methodology developed by the authors in the part 1 of the paper (RIAD) is presented. Based on the same theory of Blade Element Momentum (BEM), this approach allows nonetheless to re-parametrize the design problem in terms of blade spanwise load and power distribution, leading to a more physically sound interpretation and faster convergence of the optimization process when the turbine maximum loads are imposed as a constraint. The potentiality of the proposed methodology is first demonstrated by maximizing the power and Annual Energy Production (AEP) of a test turbine in case of unbounded rotor dimension. The same process is then repeated by bounding the machine size via an ad hoc cost function, showing promising

results.

The reviewer believes that the topic and the activity are very interesting, innovative and worthy of investigation. The adopted methodology is rigorous and clearly detailed throughout the whole paper, which is very well presented. Based on the aforementioned comments, the publication of the paper in the present form is strongly recommended.

Some technical corrections: Line 46: replace "part 2 of 2 part paper" with "part 2 of two-part paper"; Line 34: the name "Chaviaropoulos" is repeated twice;

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