

Interactive comment on “Experimental Validation of a Ducted Wind Turbine Design Strategy” by Benjamin Kanya and Kenneth D. Visser

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Dear Referee #2

Many thanks for your comments and advice.

I have addressed all your questions below on behalf of my co-author as well, however I have not attached a modified manuscript yet. Please let me know if this is sufficient and the answer to a couple questions below.

1. The first is that no detailed description of the rotor or the diffuser is given so that future developers of DAWT models do not have the necessary information to test their theories.

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We can include a figure each of the detailed geometry or a text description, namely that the rotor was of dimensions x and x and x , and the duct airfoil was an Eppler 423 with a chord of 0.6 m with inlet, throat and exit diameters of x , x , and x . Which would the referee feel to be more appropriate?

2. Secondly, the tests used a permanent magnet generator for which the manufacturer provides the efficiency curve for only one load. The experimental procedure of varying the load in search of the maximum power point is a sensible one, but it does not address the issue of the varying turbine efficiency. This is required to determine the extracted aerodynamic power, which is the usual target of the theories mentioned above.

Unfortunately, the efficiency of the generator was unknown. No load vs speed maps were provided from the manufacturer, despite requests, and we were simply told it was 95% efficient at rated output. Since the purpose of the test was to evaluate the potential of the design, and if the generator efficiencies were actually lower in reality, that would be supportive of the aero results, we simply varied the load in search of the best power point. Hence the C_p values represent the C_p for the turbine system, not the aero specifically. Do you have any suggestions as to best describe this in the text?

Interactive comment on Wind Energ. Sci. Discuss., <https://doi.org/10.5194/wes-2017-54>, 2017.

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