

Interactive comment on “Multi-element ducts for ducted wind turbines: A numerical study” by Vinit V. Dighe et al.

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Great paper overall!!! Glad to see that advanced Research is on-going in this field for small scale wind-energy. I generally agree with the conclusion of the paper. I also have a few questions:

In regards to the experimental data set from a wind tunnel experiment by Igra & Olsen, 1. Is the Reynolds number disclosed for the experimental test data from Igra/Olsen? It appears to be approximately $\sim 400000 - 440000$ at 32 m/s, based on the model dimensions listed in the paper. Pls. correct if actual Re data is known. What is the Reynolds# (Re)range in the RANS/Panel iterations?

2. The augmentation factor scale for the Igra/Olsen experimental data set shows a rise

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in power augmentation (for yawed inflows, Fig. 5, Model B) or 130% power augmentation at $\pm 10^\circ$ inflow compared to 120% power augmentation for 0° in-line flow. Is that the correct interpretation for Model B, Figure 5? The RANS and Panel solutions for Model B show very little change in power augmentation from yawed inflows $\pm 10^\circ$ and appears to be consistently 120% power augmentation factor.

3. The optimum design, from the paper's conclusion, is then: the multi-element configuration with an axial gap clearance of 5% of primary duct chord length, positively displaced (below the TE of the primary duct); second element length that is 35% of chord; and deflection angle of less than 10° . The second element camber in the paper (NACA 412) obviously has a camber less than or equal to the primary duct aero-foil camber. Any data on performance for thicker camber foils for the 2nd element that is 35% of chord; and for 2nd elements that exceed the aero-foil chord of the primary duct, by, as an example, 50 to 150% of chord.?

Please also note the supplement to this comment:

<https://www.wind-energ-sci-discuss.net/wes-2019-21/wes-2019-21-SC1-supplement.pdf>

Interactive comment on Wind Energ. Sci. Discuss., <https://doi.org/10.5194/wes-2019-21>, 2019.

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