

Interactive comment on “Ducted wind turbines in yawed flow: A numerical study” by Vinit Dighe et al.

Anonymous Referee #2

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The aim of the considered paper is to check numerically the aerodynamic performance of ducted wind turbines in yawed flow conditions. As this was checked experimentally a long time ago, the present paper brings no new results. Should the used numerical simulation prove to be reliable, it could be a useful tool in designing future ducted wind turbines. In Fig. 5 of the considered submission experimental results taken from Igra (1981) are shown; it is apparent from this figure that the ducted wind turbine performance increases with increase in the duct's yaw angle, up to ± 150 . It is also apparent from Fig. 5 that the duct's cross-section used in Igra's experiments looks like the presently simulated DonQi model. Surprisingly, in the results shown in Fig. 6 of the considered submission the DonQi duct experiences a decline in its performance (decline in CT,D) with increasing yaw angle. Is this a result of using a two-dimensional

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flow model rather than the proper three-dimensional flow which is the appropriate case at yaw conditions? The explanations for the CT,D decline observed in model DonQi, given in Sec. 5.2, are based on results obtained using a two-dimensional flow model and therefore are physically questionable. Until the authors either conduct a three-dimensional flow solution or convince the readers that a two-dimensional flow model can correctly simulate the flow through the considered duct at yaw angles the present results are questionable. Based on the above comments, I leave the decision whether or not to accept the considered paper for publication in the Wind Energy Science Journal in the editors' hands.

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