

Interactive comment on “Field Test of Wake Steering at an Offshore Wind Farm” by Paul Fleming et al.

Anonymous Referee #1

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Excellent new work on a topical subject.

Page 3 line 3, bad wording: "The positive results motivate further encourage into the design"

Page 5 line 23, losses should be loses

Table 1: "initW D" units should be given, presumably degrees.

Section 4 para 1: "minimal sensitivity to wind speed" - is this likely to depend on C_t , especially above rated? "not much benefit at very high and very low wind speeds" - how can the reader see this - is there a reference?

Section 4 para 2: "for turbine loading and safety reasons, the maximum yaw misalignment was limited to 25 degrees". How was this limit determined? "counter-clockwise

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of the wind" - counter-clockwise when viewed from above ? "because it has been demonstrated to be more effective" needs an explanation or reference

Fig. 4: what does the width of the blue band represent?

Section 5, para 2: "reduced to 1-minute averages" - What averaging is used by the yaw controller, and what hysteresis? Does the reference turbine spend significant numbers of 1-minute periods misaligned by a number of degrees until the yaw control kicks in to correct it? Could this affect the conclusions?

Equation 2: Is a cube law actually a good fit, given that there are variable losses etc.? Is N supposed to be a constant, or is it wind speed dependent?

Page 10 line 17: in last sentence of paragraph, it is not very clear what was actually done in FLORIS.

Fig. 6: presumably the plots show the fitted values of 'a'? It seems that SCADA-ON produces significantly more power at the upstream turbine over most of the range. Why, and could this be favourably biasing the result?

Figures 6-8: "the amount of days" should be "the number of days"

General comments:

Turbine loading is barely mentioned, and yet it could be crucial. What are the loading implications on the upstream turbine of the large yaw offsets? How do the downstream turbine loads change? Might they even increase due to partial wake immersion? Maybe the experiment did not include load measurements, but in view of its importance this should at least be mentioned, and any appropriate references provided.

What range of ambient turbulence intensities were experienced? Something should be said about this. It potentially makes a big difference to downstream wake dissipation. It also drives wake meandering, which again is not mentioned but could have significant effects.

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