Abstract

- Second sentence overly complicated

Introduction

- Typo in third sentence ”with induction the in-wake speed deficit”
- Explanation of Figure 1 in the text could be better
    - In the caption, a rough indication of what the arbitrary induction settings mean as well as the control methods used for affecting those induction settings would be better.
    - The term greedy control is used in the figure caption without explanation
- “the optimal dynamic control inputs…” which ref? also can you be more specific about how the induction factor is varied over time from the Meyers work 2015, 2017?
- Be careful when using optimal terminology, a grid search as described would not necessarily yield an optimum.
- The Stouhal number is introduced on first use without definition (which is in the following section). Recommend leaving out the numeric specifics in the intro until they can be introduced in more detail in the next section. Instead, focus on a better description of Figure 1 and the qualitative aspects of what is going on… it could be much better explained to help the reader develop the intuition before jumping to the numerics.

Control strategy

- What do you mean time constraints? Access to the tunnel?
- Table 1: Differences in the table could be better explained. Strouhal ranges overlap but are quite different. Can you show this better? It’s a bit confusing why there are differences and what was done to address them. In table mixing items related to pitch setting and Ct, these should be separated out and where there is a lack of information in a specific cell, put N/A or dashes. Avoid nonspecific language like “between”, use either discrete list of numbers or a distribution function – whatever is applicable
- The use of collective pitch control is only first introduced in line 24 and no other mention of induction control methods are introduced. There should be some better explanation of the different methods and why CPC was used
- Yaw control first introduced in line 31 without explanation- why does it pop up here? Why is it worth comparing DIC with yaw control? Again, this should be explained. It should also be mentioned that this will be done in the introduction. Overall the paper is lacking clear explanation of various control strategy options and implementation methods.

Simulation environment

- Why the NREL 5 MW? What limitations are there for this model?

Experimental setup

- This section is well written and answers some of the previous questions. Discussion on Ct approach in control system starting at line 14 should be brought forward to intro/control strategy sections

Simulation results

- Better justify selection of load sensors
- Weak justification of performing the range of 3 to 25 m/s… the effectiveness of the technique will taper off above rated. Going to 25 m/s is not well justified in sentence 7
- Better explain the sentence on lack of DIC input frequency / turbine vibratory modes… for instance give example of typical turbine frequencies (or those of 5 MW) to show that they are well outside the range of DIC frequency
- Figures 7-9 and table 3: using the entire range of operational wind speeds from 3 to 25 m/s is overestimating the impact of the control technique on the loads… it is likely that the technique will not do much in terms of power production improvement beyond something like 15 m/s. it is not clear that the Weibull approach fully counteracts this
- The statement that it is the worst case possible contradicts the use of the Weibull to weight the loads…

Experimental results

- Bold in table 4 not described in text or caption
- 6.2 controller comparison – explanation of control strategies should appear up in the introduction / control strategy sections

Overall

- This paper would have been better split into two papers with more comprehensive focus on each of the power production improvement possibilities and comparison to experiments and a second paper on loads implications. Each individual area feels incomplete – particularly the loads analysis section.

Referee comments

- A few comments have been marked XXX, these should be addressed.