

1 General comments

This paper is very well written and clearly sets out its assumptions and limitations. Remarks are well inserted in the text and allow the reader to follow the line of thought and to keep in mind important points. All of this make the comprehension much easier and was very appreciated.

Good wind speed estimation is a hot topic with the integration of such data in control strategy (TSR-tracking, feedforward-feedback, pitch saturation etc...) as mentioned by the authors in the responses to reviewers for revision 2.

The use of mid-fidelity simulations provide useful insights on the use of tuning made with lower fidelity assumptions.

I did not check all the mathematical developments in this paper and will focus on the rest.

2 Specific comments

1. Line 260: the generator efficiency of the NREL5MW is taken as $\eta_g = 0.94$ for some simulations. However, in section 6.1, line 560, generator efficiency is taken as $\eta_g = 1$ for both turbines. Did you use an efficiency of $\eta_g = 1$ when generating the power coefficient Cp tables? Moreover, is there a specific reason not to use the generator efficiency values provided in the models?
2. Immersion and Invariance method for wind speed estimation was mentioned. In the well-known ROSCO controller, Extended Kalman Filter is also implemented. Did you compare against it or do you have an opinion about it?
3. It would be very interesting to see the effects of various wind speed estimators on the power production itself if it is used in TSR-tracking control strategies for example.
4. While it was already addressed in previous responses, I would like to reiterate on the Assumption 1 comment. Pitch control before the rated power is indeed very useful. The methodology presented in this paper could however be adapted to multi-entries power coefficient Cp mappings, which is satisfying.
5. Once more, it was already addressed in previous responses, but using ElastoDyn module that does not account for blade torsion has shortcomings, especially for large rotor such as the IEA22MW. Will you try to include multi-entries Cp mappings in future works?

3 Technical corrections

1. Lines 154-156. I understand why the $K\omega_r^2$ is used but I think one sentence is missing to explain the limitations of such a controller. As it is not straightly presented, it can be a bit confusing to follow why there is a point beginning with “However” just after that.
2. While on screen, it is not too hard to distinguish the curves, the choice of color scheme (blue, green, gray) make it a bit hard to see clearly the differences on Figures 14 and 15 when the article is printed. It was especially true in my case for the zoom on bottom-right of Figure 14 where I had to refer to the original pdf to better see the bias.