

Interactive comment on “Development of new strategies for optimized structural monitoring of wind farms: description of the experimental field” by João Pacheco et al.

Anonymous Referee #1

Received and published: 29 April 2020

This paper presents the Tocha wind farm as well as the sensors installed and some initial results from those sensors. The paper is interesting, and it is useful to see the different types of results from different types of sensor. The purpose is as a precursor to future work, but I think the paper is interesting enough on its own merit. The paper is generally well structured and well put together, however I have several observations.

Individual questions and issues:

Section 3.1 needs more detail on the simple model as results are presented later. Some more specifics on things such as how elements are modeled, what boundary conditions are used and what assumptions are made would be useful.

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It's not clear how much data was used to construct the frequency tables in figure 8. Are these single observations of frequency or are they averages of multiple observations? It would also be good to know how much deviation is observed to give context to the level of difference between 'non-operational' and 'operational'.

Line 129: it's mentioned that turbine 5 behaves 'differently' to the other turbines. Although a difference can be seen in figure 9 it would be clearer for the reader to say in the text what this difference is.

In section 4.2, I don't think it's ever mentioned what the sampling rate of any of the sensors are. Since a comparison is generally invited between the different sensors, such as that strain gauges can be used for an OMA purpose, it would be useful for the reader to know how comparable these sensors are regarding aspects such as the sampling rates.

Line 242: It's mentioned that a model is conducted in FAST, also mentioned before in section 3.1, and the results are compared to the measurements. This is all moved on from too quickly. Why is a FAST model used? How important for that purpose is the difference from the measured results? Please give a bit more of the pertinent details on this and explain the aspects of this which might be of interest to the reader.

Technical corrections:

Figure 1 is good for expressing the process, but the bottom three rows are confusing, what do the bars to the right of 'Blades', 'Tower' and 'Foundation' mean?

Figure 9, it would help the reader to state in the caption that these measurements were from the non-operational condition.

The description in the text of figure 17 (line 246) doesn't quite match the figure. It seems the results for 'Force-balance accelerometers' was added without updating the text.

Line 122: please define the acronym ANPSD before using it.

A few minor typos and some grammatical errors throughout, though not too bad. Some examples:

I think you should capitalize 'Robot Structural Model'

Check grammar in line 86-87.

Table in Figure 7: I think the second fexp should be fmodel

Please check the grammar in the sentence at line 144.

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