

## ***Interactive comment on “Modal dynamics of structures with bladed isotropic rotors and its complexity for 2-bladed rotors” by Morten Hartvig Hansen***

**V.A. Riziotis (Referee)**

vasilis@fluid.mech.ntua.gr

Received and published: 11 October 2016

The paper compares the modal dynamics of two and three bladed turbines. The analysis is performed under a unified context based on the application of Hill's method. The paper is very well written and the key findings are highlighted in section 4.6 where the two types of rotors are compared (2 bladed vs. 3 bladed). I very much enjoyed reading it. One thing that could be missing is perhaps an example with a non isotropic 3 bladed rotor. I don't know if there is any space left since the paper is already quite long and seems to be out of the scope according to the title.

Some general comments:

C1

Name convention for the modes is different in Figure 4 and the following figures. In figures 5-23 the author uses a number code. Although it is clearly explained in the text given that the figures are self explained (and this is nice) it would be better to use the same name convention (that describes the shape of the mode) also in plots 5-23.

Although the results of the analysis for the 3 bladed rotor are well expected, presentation of these results is found necessary in order highlight the differences between the two types of rotors. However, given the size of the paper (already 37 pages) a suggestion to the author would be to reduce slightly this part by presenting modal results for fewer modes and discuss the rest. Another idea could be to remove the 3D plotting of the modal displacements (at least in some of the plots) since it does not offer much. The picture is made clear already with the 2D plots I guess.

In section 4.4 the sentence starting “Looking at all figures” should be rephrased. After reading several times I understood the point the author wants to make but it is definitely not clear from first reading. I think the author tries to say something very obvious but in a rather complex way.

Some editorial changes,

Page 3, below line 15 “a 2 bladed turbine do not have” Page 5, below eq. 11 “DOFs are order as” Page 9, below eq 30, use upper case symbol on Nd Page 18, below line 10, “in close agreement of..”

---

Interactive comment on Wind Energ. Sci. Discuss., doi:10.5194/wes-2016-27, 2016.

C2