

Interactive comment on “Multi-fidelity Fluid-Structure Interaction Analysis of a Membrane Blade Concept in non-rotating, uniform flow condition” by M. Saeedi et al.

Anonymous Referee #2

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I do like this article, it opens a new concept for wind energy community and could be very applicable for small sized turbine. I think the authors has done a very interesting research and I would recommend acceptance of this paper. However before I would have some recommendation to improve the quality of the paper. My big concern is generally about the structure of the paper and also the writing style I guess there are in some parts too much information which can be removed and is not necessary for article. here are my recommendations.

General comments:

how do you see the application of this work for larger sized blade? How is the applicability of this work when you have the pitch control turbines? what will happen in case

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of storms or guest to the membrane. would it be possible to provide some results also about the loads?or vortex shedding frequencies?

Recommendation for correction before publication.

line 3 —has the length of about 5 m—about should be removed Abstract is too long and does not address well the concept of the paper. Its more like an introduction. It contains some information which should be in the introduction part e.g. line 5 to 9. I would suggest to first introduce what you want to do in this paper. then very short about the method and at the end small section about the results. Move the rest of information to the introduction part. page 2 line 20 to 25 the goal of the paper should be at the very end of introduction section. line 35 should be reformulated. its not very clear to me what you wanna say here. page 4 section2: I think more information is need about the FSI it self, which method you are using e.g. linear or nonlinear Beam. page 5 line 5, please cite to OpenFoam website and also to vortex code you used. line8 please give more information about CPU type and CPU hrs page 6 I think Eq 1 and 2 are very well known so you can remove them and save some space Same for Vortex panel method, no need to explain it, just cite it from somewhere. If the vortex code is developed by you then maybe you need to cite the paper which relates to this implementation and also the validation. however the validation you presented here its not enough I would say you need more simulations for different AOA.

page 12, section 3, I guess you can rename it to numerical model, page 13 section 3.1 I think this part is also repeated, maybe you can remove it page 14, I think for the Fig 10 you can add a plot with deformation in each section along the span instead of the front view.

page 15, can you put a Fig of you grid around the blade surface near the tip and LE and TE? I would also like to know why you are using wall function?why not $y+1$? Do you know if the openfoam is validated for wind turbine analysis? can you reference to some works? I thinks we do not need validation of OF for WT cases here, because the

paper examines a non-rotating blade. can you use eps format for your Figs? Fig 13 can be removed. page 16 section 3.3 rename it to numerical instead of simulations

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