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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.

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Generally how do you avoid or reduce the vibration on the membrane structure induced by vortex shedding? And how does this vibration affect on the aerodynamic performance and the structural loading on the blade and the stability of the blade structure?

Dynamic response of the membrane blade system should be studied in a separate, subsequent work. As an outlook on expected phenomena, one can take the conclusions of the paper below. Gordnier has studied the dynamic behavior of a membrane airfoil with applications for Micro Air vehicles (MAVs). The paper studies the momentum added to the shear layer due to membrane's vibration and observes two factors

for lift enhancement of the membrane wing: the predominant one being increase in the mean camber and the other being membrane motion. Overall effect of these two phenomena is a delay in stall for the membrane airfoil.
How these vibrations affect the fatigue life time of the membrane structure is yet to be studied.
R. E. Gordnier, High fidelity computational simulation of a membrane wing airfoil, Journal of Fluids and Structures 2 5(2009) 897–917

Please check the style of how to citing the reference to see if using the year of the publication in the round bracket is the right format? Normally, the [] bracket should be used for citing the reference.

The journal suggests using [ ] brackets with the year of the publications. Citations are updated accordingly.

Figure 1. "Anylsis" should be "Analysis"

corrected in the paper.

Page 5, line 7 please give the information of the CPU which has been used for these two approaches (FSI_CFD and FSI_Panel).

Main specifications of the used hardware: (3.40 GHz, 8M Cache,15GiB RAM). This information is added in the revised paper

Page 6, In section 2.1.1, You could include more details to show how the non-matching mesh mapping algorithm works.

A description of the used mapping algorithm is added to section 2.3. However the details of how consistency is satisfied for the mortar mapper and how the clipping is implemented for the mapping between non-matching meshes are skipped and it is referred to the paper by (Wang, 2016). In that paper, a detailed derivation of the governing equations is presented and the implementation is explained. Moreover, a systematic testing of the used implementation here is performed.

Page 6, the section 2.1.2 can be shorted by just put the reference to eliminate some of the equations about the point source and point doublet, etc.

The section is shortened by omitting the formulation of point source, point doublet and the steady state Bernoulli equation.

Page 10, line 20: "interaction" should be "interactions"

corrected in the paper.

Page 16, line 8, It is not very clear to me what are you going to say here in this sentence. "For FSI_CFD case the deformation of the blade, which as applied to the blade patch is diffused into the fluid domain."

First of all, there has been a typo in the sentence. It should be ..., which is applied to the...
What is meant is that the displacement at the boundaries of the domain should be prescribed as boundary conditions for solving the mesh motion problem in openFoam. Zero displacement is applied at the far field boundaries and at the FSI interface, blade's displacement calculated by the structural solver is applied as the boundary condition. A laplacian equation is then solved for calculating the displacement of the internal mesh nodes.

Page 16, line 5, Here should be a typo mistake "us" -> "is". Otherwise, I don't understand what is the meaning of the sentence.

corrected in the paper.

Please also note the supplement to this comment:
http://www.wind-energ-sci-discuss.net/wes-2016-6/wes-2016-6-AC3-supplement.pdf