

Interactive comment on “Characterization of the unsteady aerodynamic response of a floating offshore wind turbine” by Simone Mancini et al.

Anonymous Referee #1

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General comments: A downscaled model of the DTU10MW turbine is investigated which is subjected to small harmonic surge oscillations representing one possible motion of a floating wind turbine. Numerical models of different levels of fidelity are used to evaluate the thrust and power response of the turbine to the oscillation. The results are compared to experimental wind tunnel studies. The topic is of high relevance as the design of floating wind turbine is still affected by large uncertainties. The quality of the numerical and experimental methods is state of the art and the outcome is of great value for the community as a benchmark for code validation.

Specific comments: I would suggest precisising the title to “Characterization of the unsteady aerodynamic response of a floating offshore wind turbine to surge motion”

Maybe is should be clarified early in the paper that whenever surge is mentioned,
C1

harmonic surge is considered.

Corrections:

Line 18: The variables in the equation should be introduced

Line 73: The bracket before “(Bayati et al., 2017b)” should probably be moved “Bayati et al. (2017b)”

Figure 2: Size should be increase for better readability

Line 160: “i.e. all what attached” -> “i.e. all what is attached”

Line 294: double “the”

Figure 7: Which test number or amplitude or shown?

Line 310: a comma behind “both” is missing

Line 347: This sentences is hard to understand and should be rephrased: “The main cause of these oscillations is the turbulence that, albeit weak because of the smooth flow boundary condition at inlet, forms upstream the turbine because of both the high wind tunnel Reynolds number ($Re \approx 1.6 \times 10^6$) and the influence of the actuator forces in the rotor plane”

Line 449: “. . .coherent to what was observed for the thrust. . .”

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