Lodz, Poland, 29th June 2020

Dear Reviewer,

We thank Anonymous Referee 1 for the time and comments. In the following, we will do our best to reply to the comments and propose improvements for the final manuscript.

Enclosed please find the changes made to the original manuscript following the review by Anonymous Referee.

Anonymous Referee minor remark #1: Page 9, 3.3 Study cases… : It seems to the referee that the aerodynamic interaction between individual rotors is important. If all the rotors are operated normally under a small shear and a small fluctuation in wind speed and direction, the interference may be small. However, if each rotor in a MRS is operated with a large different rotation speed due to some causes, like one rotor failure or inherent fluid dynamic interference for the flow around multiple bodies in a smooth or turbulent flows, the wind load for each rotor is different largely, it may give a significant irregularity and/or a bias in the power output and wind load to the MRS system. Please imagine a case that one rotor is operated and the other is stopped with one tower. The thrust force for each rotor is very different. What happen in the MRS under this situation? How do the authors think of it?

The authors' reply to Anonymous Referee minor remark #1: The referee is right pointing a single major failure of a rotor enclosed in the MRS form. The problem of control system for MRS is very profound and has been under investigation by many researcher, including one of the co-authors of this article, Peter Jamieson. Article "Yaw Control for 20MW Offshore Multi Rotor System" by Euan MacMahon et al., in: European Wind Energy Association Annual Event (EWEA 2015), 2015/11/17-20, Paris, points that a novel yawing technique applied to adjust the thrust of the individual rotors is very feasible. For example, if a clockwise motion is required to reduce the yaw error, the thrust of the rotors on the right hand side of the yaw axis, may be reduced. If a failure happens on the other hand, same system can be used to alleviate the increased structure loads. The article goes on to explain that aside a standard FEC (Full Envelope Controller) that is used to maximise power output below rated wind speeds, keep the power production constant above rated winds, reduce loads on a turbine, another control device can be used – the PAC (Power Adjusting Controller). With feed forward controller the PAC, in relatively short amount of time as it has been simulated, can be used to alter the power output of the wind turbine thus causing a change in the thrust force acting on the rotors, what translates to inducing a yaw moment on the tower. This can be used to counter the effects on single rotor failure. Of course the described control strategy is just highlighted here and would require optimizing for minimum power loss and various failure scenarios in mind.

Anonymous Referee minor remark #2: Page 10, table 6: What are the definitions of Bl_DefInP and BL_ DefOoP ?

The authors' reply to Anonymous Referee major remark #2: The parameters *BL_DefInP* and *BL_DefOoP* are blade deflection in-plane and blade deflection out-of-plane, respectively.

Anonymous Referee minor remark #3: Page 10, table 6: How those values are evaluated for Bl_ootMx and My? Just depend on the height only?

The authors' reply to Anonymous Referee major remark #3: The notations *Bl_RootMx* and *Bl_RootMy* refer to the 'edgewise' (in Y_bZ_b plane) and 'flapwise' (in X_bZ_b plane) blade root bending moments respectively. The local blade-oriented rotating coordinate system $X_bY_bZ_b$ is shown in the figure below.

The blade root bending moments are based on fully discretized blade geometry, section by section respecting local chord, radius and force.

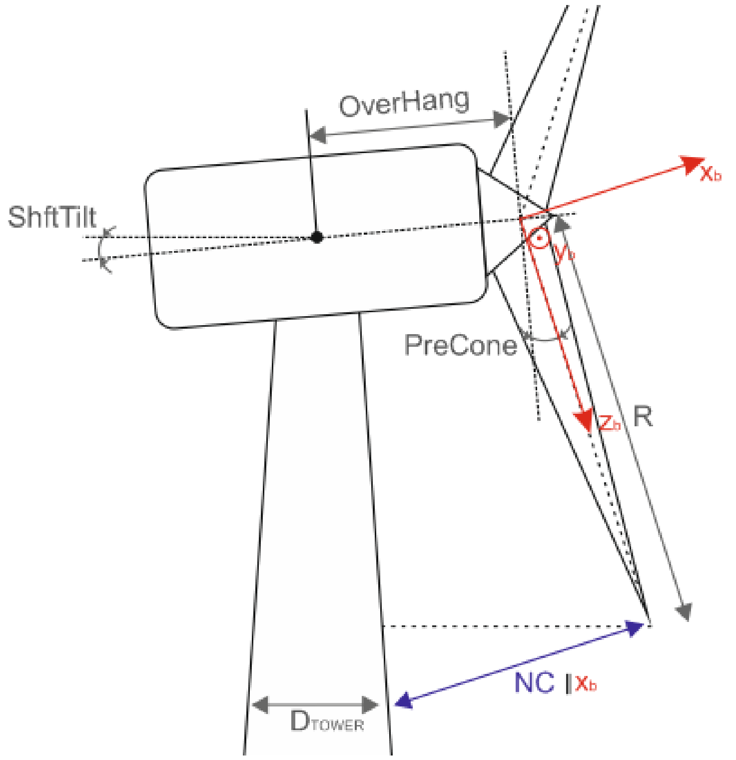

Fig. A11. Schematic representation of wind turbine rotor and nacelle assembly plus tower; NC - nominal clearance between tower and blade tip (own picture)

Anonymous Referee minor remark #4: Page 11, 3.3.2 Normal turbulence model : Does the TurbSim include the fluctuations in the wind direction?

The authors' reply to Anonymous Referee major remark #4: FAST simulations were carried out using turbulent wind profile prepared in the TurbSim software. It is a full-field, turbulent-wind simulator allowing a user to create wind profiles according to the specific IEC standard (in this case the IEC 61400-3 which is the version suitable for offshore wind turbines). Medium turbulence intensity category *B* (I_{15} = 0.16 and a = 3) was selected and characteristic mean speed over the period of 50 years $V_{ave\text{-}CD1}$ was set as a reference value for the hub height of 90 meters. The wind speed fluctuations were stochastically simulated in each time step.

Anonymous Referee minor remark #5: Page 11-13, in the Figures 7-10: The denotations for the symbols and lines are so small to read.

The authors' reply to Anonymous Referee major remark #5: The aforementioned figures have been enlarged.

Anonymous Referee minor remark #6: References: it should be written in more comprehensive way.

The authors' reply to Anonymous Referee major remark #6: Where it was possible, the authors made improvements and added more details to cited works.

Sincerely Yours,