

WES-2020-23

Title: Potential of load and O&M costs reductions of Multi Rotor System for the south Baltic Sea

Author(s): Maciej Karczewski et al.

MS No.: wes-2020-23

MS Type: Research article

Special Issue: Wind Energy Science Conference 2019

Referee's comments:

This paper describes an analysis of the economic aspect, power output performance and wind load issues for a MRS composed of 7 rotors compared to a single bigger standard wind turbine of 5MW size. The analyses are reasonable, very interesting, innovative and useful, although there are a lot of assumptions for the analyses. It seems to the referee that the present paper should be acceptable to WES.

For minor points, there are a couple of questions and comments as follows:

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?
2. Page 10, table 6: What are the definitions of  $Bl_{DefInP}$  and  $BL_{DefOoP}$  ?
3. Page 10, table 6: How those values are evaluated for  $Bl_{ootMx}$  and  $My$ ? Just depend on the height only?
4. Page 11, 3.3.2 Normal turbulence model : Does the TurbSim include the fluctuations in the wind direction?
5. Page 11-13, in the Figures 7-10: The denotations for the symbols and lines are so small to read.
6. References: it should be written in more comprehensive way.