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Paper Title: Grand Challenges in the Design, Manufacture, and Operation of Future Wind Turbine Systems

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Reviewer: Panagiotis (Takis) Chaviaropoulos

### REVIEWER'S COMMENTS

This article is a joint effort of highly reputed researchers in the field of wind energy to identify critical unknowns in the design, manufacturing, and operability of future wind turbine and wind power plant systems and articulate and recommend relevant research actions.

The paper is complete and well and clearly written. It is not the first time that the reviewer meets the text, as it becomes clear from the Acknowledgements section. Having read and commend on earlier versions of the article, which the authors took under consideration, there is not much new to suggest for further improving the quality of the publication. Some minor comments are:

1. There is an extended list of authors cosigning the publication. It would be nice to know, already from the introduction how these authors came to work together and under which initiative.
2. Section 1.3 Comment on the scope. The reviewer believes that the scope should be further refined. The paper focuses on "Mechanical Engineering" aspects and does not elaborate on other disciplines that maybe of equal importance for wind energy research. This is not necessary a problem if the boundaries are clearly stated in the scope.
3. Some additional references may better support some of the statements in the text.

Examples:

- a. lines 153-154, statement on non-Gaussian turbulence
- b. lines 337-338, machine learning training of low-order models
- c. lines 958-960, high-fidelity CFD and ML training low-order models
- d. lines 1090-1091, support statement with reference
- e. lines 1677-1679, new materials with increased structural damping (see for instance the DAMPBLADE EU project)
- f. lines 1715-1719, new materials
- g. lines 1748-1750, new epoxy resin
- h. lines 1800-1801, non-destructive inspection technologies

Given the above, the reviewer's final recommendation for this article is "Publication with minor corrections".