

Response to Reviewer 1

We appreciate the reviewer's insightful feedback, which has greatly enhanced the quality of our manuscript. We have made revisions in line with these suggestions. Below, we provide detailed responses to each comment.

Comment 1. The object of this paper is to optimize the structure of bend stiffeners that are used in underwater inter-array power cables. The paper introduced the structure of power cables with buoys attached to bend stiffeners and the state-of-art research about bend stiffeners. The study cases considered the maximum effective tension, minimum bending radius, and fitness factor of static and dynamic analysis. The results present the influence of several parameters on the bend stiffeners between two floating offshore wind turbines.

The results are interesting for the cable design. After reviewing, the paper can be accepted after grammar and spell check. For example:

- Abstract: 'withing' – 'within'
- Abstract: 'bending radii'?
- 'To the best of authors' knowledge' - 'To the best of the authors' knowledge'
- 'Present study aims...' – 'The present study aims...'
- 'The summary of main findings of the study are given in Section 4.' – 'The summary of the main findings of the study is given in Section 4.'

It is necessary for the author to re-check the grammar throughout the paper.

Response: The manuscript has been carefully revised and all the typos and grammatical errors listed by the reviewer have been corrected.

Response to reviewer 2

We appreciate the reviewer's insightful feedback, which has greatly enhanced the quality of our manuscript. We have made revisions in line with these suggestions. Below, we provide detailed responses to each comment.

Comment 1. Thanks for the authors' work. As reviewers, there are some questions regarding this work. From the reviewers' view, this work is more like a sensitivity study about bend stiffener parameter (ODa, ODb) influences on some criteria (MBR, MBL...) as only limited cases are investigated. If the optimization process applies, could the stiffener parameters be considered continuous, not discrete?

Response: In the parametric space of bend stiffener properties such as geometrical and material properties these parameters can be considered continuous. From practical reasons, a discrete set of parameters has been selected in the present study. Each bend stiffener design case requires multiple time domain simulations of the whole multi-component coupled system (floating wind turbines, mooring system, suspended power cable). The required computational effort was the reason of limiting the scope of the study to the range of parameters given in Table 2.

Comment 2. As listed in Table 5, there are some acceptance criteria. Reviewers want to know where these limit values (2.5, 90000...) come from. Could the authors give any references or explanations?

Response: The limit state values listed in Table 5 are based on Beier et al. (2023) study. Appropriate reference has been added in the revised manuscript. The values in Beier et al. (2023) are provided by the manufacturer of the reference power cable used in their study.

Comment 3. Regarding Fig.5., the authors did the static analysis first, checked the acceptance criteria, selected some cases for the dynamic analysis, and rechecked acceptance criteria. The reviewers would like to confirm whether there are 4 cases or 3 cases selected for dynamic analysis, as there are two numbers in Fig.5. Then, the reviewers would like to know why not consider all the cases that meet the acceptance criteria of static analysis for dynamic analysis.

Response: The authors have amended the mistake in Fig. 5 to accurately reflect that only 3 cases were chosen for the initial dynamic analysis. This selection was made because the study incorporates 8 environmental loading conditions (per case). Including all qualified cases in the initial analysis would result in an excessive number of simulations. However, in the subsequent phase of the dynamic analysis, all eligible cases are examined under the 3 most critical environmental conditions.

References

- [1] Beier, D., Schnepf, A., Van Steel, S., Ye, N. and Ong, M.C. (2023). Fatigue Analysis of Inter-Array Power Cables between Two Floating Offshore Wind Turbines Including a Simplified Method to Estimate Stress Factors. *Journal of Marine Science and Engineering* **11**(6), 1254. <https://doi.org/10.3390/jmse11061254>