RESPONSE TO EDITOR AND REVIEWERS

We express our gratitude to the editor and reviewers of the CoTech Conference for their valuable and constructive feedback on the manuscript.

We address all comments in detail below. These main modifications are added to the manuscript and submitted in a PDF file.

Editor's comments:

-It is highly recommended that the contact author uses institutional e-mail address. Authors are also recommended to include their ORCID numbers in their paper.

Response: We have added the ORCID numbers of the authors to the paper. Contact author institutional E-mail is also added.

- Figure caption: make the word "Figure X" in bold, where X is the figure number

Response: Thank you for highlighting. All the "Figure X" below the figures are now in bold.

- Figures 3, 4, 5, and 6 could be under one figure caption as Figure 3 Pressure coefficient across the cylinder at cylinder height a) z/D = 0.3, b) z/D = 0.5,…

Response: As specified in the comment, we have updated the figures under one main caption as Figure 3 and four sub-captions.

- Reference list: Journal names are not written in their standard abbreviations.

Response: We have updated Journal Names to their standard abbreviations.

Reviewer #1

1) The titles registered in the conference system, and the ones in the full-length paper are different – please adopt only the latter (shorter) one. Adopted to the latter (Shorter) title.

Response: We agree that the title should be updated and adapted to the shorter title, the one in the paper. Unfortunately, we cannot edit it on our own in the web portal. We would appreciate it if it is possible to change on the editor side.

2) Typical Reynolds numbers expected in the field applications should be mentioned, and the related impact of the difference in Reynolds numbers between the simulations and the field applications on the simulated flow features briefly discussed.

Response: We have added the information about Reynolds numbers in the field application in the first paragraph of the methodology section and the reason for choosing the present Reynolds number in the subcritical regime.

3) End of section 3.1, on the Strouhal number: where along the cylinder is the St number estimated?

Response: We have edited the text as: "Frequency analysis of the total side force (lift force) of the entire cylinder resulted in Strouhal numbers of 0.150 and 0.148 for f_k values of 0.1 and 0.5, respectively."

4) Text above Figure 10: - is "exponent increase" the best wording? Try to modify.

Response: We have changed the wording to: "High oscillations occurring near the sharp edge […] might cause the increase of force observed close to the interface."

5) Figure 10: bring the (a) and (b) caption below the figure, e.g., using the existing figure caption and adding "…along the thin cylinder (upper plot) and the thick cylinder (lower plot) in a step cylinder configuration…"…" or similar.

Response: We have updated the figure captions and moved them inside the figure as mentioned by the second reviewer. The Figure 7 (former Figure 10) caption is: "Sectional drag coefficient distribution along the SDC (upper) and LDC (lower)".

6) Figures 12 and 13: Vertically aligning the cylinders in the upper and low plots is desirable; e.g., the position offset in Figure 13 right does not seem logical.

Response: We have adjusted the alignment and removed the offset in both figures 9 and 10 (former figure 12 and 13).

7) Conclusion, line 1: consider "excitation" instead of "impinging."

Response: We changed the wording to "excitation," as mentioned.

8) Conclusion, last line: Since the studied cable connection has a rotational symmetry about the cable axis, it is not clear why the yaw angle would have an effect; do the authors mean “the inclination angle”?

Response: Thank you for this comment. You are right that the cylinder has symmetry, and apparently, the yaw angle can be perceived differently based on the axis perception of the reader. We mean by yaw angle as the inclination angle. This has been updated to “inclination angle” in the newer version.

Reviewer # 2:

Comment: Text removal for better understanding involves the removal of these phrases: “forces and,” “coefficients for,” “Therefore, fk values are adjusted to 0.5 and 0.1”, “edge features,” “resembling different possible,” “away,” and “away,.”

Response: We have removed these words and phrases for better understanding in the newer version, as suggested by the reviewer.

Comment: Abstract: This could be rephrased to explain better the purpose of the buoyancy module and its configuration. Also, a wider cylinder is perhaps better phrasing than a thicker cylinder.

Response: Thank you for noticing. We have updated the abstract and highlighted the purpose of the buoyancy modules in power cable configurations for floating offshore wind turbines. Buoyancy sections decouple the motions from the floating offshore wind turbine and the destination point on the power cable to ensure the integrity of the configuration and system.

We understand that “thicker cylinder” is not the correct term here. It creates confusion when the cylinder is hollow, where it refers to the wall thickness, which is not the case here. Therefore, we decided to use a precise description and abbreviation throughout the entire text instead: The former “thicker cylinder” is changed to “larger diameter cylinder” and uses the abbreviation LDC. The “smaller diameter cylinder” uses the abbreviation SDC.

Comment: Clean up the figure by dropping the titles in Figures (3,4,5, and 6) as the information is available in the figure caption.

Response: We dropped the titles in Figures 3a, 3b ,3c, and 3d (former Figure 3, 4, 5, and 6). The information is now available in the sub-captions.

Comment: Section 4 result and discussion, last sentence. It would be of interest to the reader to know how the computing time between the two approaches compares.

Response: Thank you for the suggestion. In PANS formulation f_k is a coefficient. Therefore, the same number of equations are solved using $f_k = 0.1$ or 0.5. Hence, the computation time remained similar as the mesh was the same in both cases.

Comment: Figure 10: (I would reconsider reducing the scale perhaps to 1.5 and then moving the legend to the bottom. The font of the text is also excessively large.). Sub-caption: Put this text inside the figure at the bottom, or in the figure caption.

Response: We rescaled the figure to 1.5. We resized the legend (tiny Large), and they are now at the bottom of the figure. Figure 7 (former Figure 10) caption is: "Sectional drag coefficient distribution along the SDC (upper) and LDC (lower)". The sub-caption text "(a)" and "(b)" is inside the figure.

Comment: What does D mean?

Response: We have described this symbol in section 2.1.2. D means the diameter of the larger diameter cylinder, while d means the diameter of the smaller diameter cylinder. In the newer version, we have mentioned that D is a reference length for analysis after describing these symbols in section 2.1.2.

Comment: Figure 11: perhaps this discussion should have come in the previous section.

Response: As this paragraph discusses the structure of the flow and not the forces, we think it fits better in Section 4.2, "Flow Patterns."

Comment: Figure 15: With a sharp edge, please state that information.

Response: We have included "sharp edge" in the caption of Figure 12 (former Figure 15).

Last comment: Why only evaluate CD? Why not CL? Is that not important for the dynamics of the structure? It would be good to include the comment on that in the paper.

Response: We agree the lift coefficient is an important factor in the dynamics of the structure. However, the scope of the study was on the drag coefficient since it is an important parameter in the Morison equation. The most commonly used analysis software applications for offshore systems, such as OrcaFlex, employ this formula for their calculations; hence, adequate coefficient values are needed.