General comments:
This manuscript is a significant contribution to the understanding of the flow mechanisms governing the effectiveness of VGs on a wind turbine rotor. Generally, the manuscript is clearly written and makes proper reference to related works. The authors use high-fidelity CFD for the investigations, which is a suitable choice because it allows a detailed one-to-one analysis of the impact of different VG configurations on the inboard blade aerodynamics of a wind turbine in comparison to the case where the turbine operates without VG's. The numerical setup is well described.
However, I think the structure of the results section could be improved. Currently, this section initially describes the results for the uncontrolled case, then the case with blades partially equipped with VG's and finally the fully equipped blades. I believe that the structure would be improved by making one "Blade loads and Himmelskamp force" section, in which these are described and compared for all three cases are in a more direct manner. The same thing goes for the "Assessment of boundary layer state" section. With this restructuring, the reader would not have to go back and forth in the manuscript to compare results/figures. For example, figures 10, 14 and 18 could be gathered into one figure with three subplots and be shown as part of the boundary layer state section. At the same time, I think that you could avoid some of the repetition, which is currently in the manuscript and thereby make it shorter. Based on this, I recommend the manuscript for publications provided it be subject to minor revisions.

Specific comments:
L100: On the other hand, the VG should not be too low (so that they essentially are just roughness elements).
L140-146: I suggest rewording research question Q1 so that it is more general than just aimed at the considered turbine. For example to something like this: "How are the loads and the state of the boundary layer of a turbine without VGs affected by rotational augmentation for different pitch settings?" It is true that you only consider one turbine and as such cannot answer it in general but on the other hand, your analysis of the loads and boundary layer state is quite general. Although the results will not be identical for another rotor, we must expect that many of the mechanisms you show are general for all rotors.
L157-158: I think it is stretching it too much to consider these effects negligible. They could very well have a significant impact. However, from a research point of view, it is perfectly valid to neglect these effects and only focus on the rotational effects.
L188: It is not entirely clear what the size of epsilon is. You refer to Seel et al. but it would be good to state e.g. how epsilon relates to e.g. the grid spacing. It seems that epsilon is governed by the distance between the kernel points used to define the VG shape but I guess it must also depend on the spacing in the CFD grid. Could you please clarify?
L195: Please state the used values for the radial, upstream and downstream distances, respectively and not only refer to Sayed et al.
L228-230: The variation of hVG is stated to be a best fit to recommendations from previous research works, i.e. hVG<0.5delta99 and hVG<0.1c. However, Fig. 5 (and Table 1) shows that hVG ~ delta99 and from Fig. 5 it is not possible to see how hVG relates to the chord. So please clarify in the text or update Fig. 5.
Fig. 5: The caption text is a bit confusing. When I first read it, I expected two curves for the boundary layer height: one for the design case and one for the off-design case. I do understand what you mean but I still suggest rewording.
Fig. 12, 13 and 17: Why are you showing the radial flow acceleration and not just the velocity? As you write in L267-268, it is the radial velocity, which through the Coriolis force causes an acceleration towards the trailing edge. Therefore, I think it would make more sense to show the radial velocity.

L321-323: Please clarify the threshold used to define the boundary layer thickness. I don't understand the latter criterion of dw>0.0001m.
Results: I think your manuscript would benefit from a restructuring as described in the "general comments". This would more naturally facilitate a comparison of the flow state and loads with and without VGs. I understand that this may be a bit cumbersome but I believe that it would strengthen the manuscript so at least you should consider it.

Technical corrections:
The authors often use interposed and/or parenthetical sentences, which are not always helpful for the overall understanding. I suggest that you revisit the manuscript and decide whether these sentences are always necessary or whether they could be reworded. Below, I have made suggestions to rewording a few of them in a way that I find more readable. There are more of these sentences, which I think could benefit from a rewording but admittedly I'm not an English expert so maybe it is just me.
L243: I suggest rewording to: "This work considers six cases as presented in Table 2."
L331: Maybe rephrasing to: "This is an indication that the rotational effects are larger for the oDESNoVG case as was also seen in the blade loads."
L399: Change "chapter" to "section"
L420: The sentence "…for each the VG of a pair …. at the same time lower or no inclination angle …." is confusing. Please rephrase.
L447: Change "object" to "subject"