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Interactive comment on "Grid-forming control strategies for blackstart by offshore wind farms" *by* Anubhav Jain et al.

Anonymous Referee #2

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This paper includes a brief literature review of grid-forming converter control strategies and compares their performance when implemented on offshore wind farms. In general the paper is fairly written, however there is a very little novelty in the paper. My specific comments are as follows:

1. The Abstract and Introduction are well written and related literature has been identified and cited well. 2. Section 2.3 does not have a title and should be included. 3. In Line 142 the term Inertial is spelled wrong. Please do a proof reading of the paper. 4. In Fig. 1 which voltage is controlled by the Cv loop ? From my understanding it should be replaced by a block that generates current references from back calculation as in PSC. In PSC, The PCC voltage or reactive power is controlled using droop based or integral controllers (named as secondary droop in Fig. 1) which takes the input as

delta V or Delta Q. The structure shown in Fig. 1 is similar to VSG. However, in this case the input delta V to the secondary droop should not be present. Hence, I would suggest restructuring of this general block scheme and an improved explanation to it. 5. In Line 180 the word alternatively is spelled wrong. Please do a careful proof reading of the paper. 6. Figure 2c) is not correct. The output of AVC in PSC is NOT the reference voltage for the PCC, V_f^*. Once the active damping has been implemented it gives the reference voltage for the converter in the converter DQ frame. This reference is used along with the PCC voltage and current measurements to estimate the real current which is governed by equation 7. If the estimate is greater than the threshold the current references are set using hard control and finally the current controller generates the new reference voltage for the converter in the converter DQ frame. Please correct it. I would also suggest that block scheme for all the control strategies should be modified. The vector and scalar quantities should be identified clearly. 7. Please show the tuning criteria for all the control parameters while explaining the control strategies. 8. In equation 3 dw/dt should not be equal to theta. Theta is integration of w over time. 9. Comparing DPC with other control strategies that include closed loop current controller seems unfair to me because the dynamics of closed loop current controller are not present in DPC. 10. Please mark terminals T1 and T2 in the figure 3.

The paper Italicize the text to a great extent. This is not required. Please italicize only important text.

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