

Wind Energ. Sci. Discuss., referee comment RC1
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Comment on wes-2021-4

Anonymous Referee #1

Referee comment on "High-Reynolds-number investigations on the ability of the full-scale e-TellTale sensor to detect flow separation on a wind turbine blade section" by Antoine Soulier et al., Wind Energ. Sci. Discuss., <https://doi.org/10.5194/wes-2021-4-RC1>, 2021

\noindent{\bf General comments}

\quad In this manuscript, the authors intend to show the ability of the full scale e-TellTale sensor to detect the separation state of the flow on turbine blades.

\quad The wind tunnel experiment of 2D NACA 65_{4}-421 with 0.693m in chord length was conducted at Reynolds number of 8.85×10^5 with pressure measurement. Several configurations of e-TellTale sensor are tested on the surface and the signal was measured for each configuration. The result shows that the sensors are able to detect the separation states from both leading edge and trailing edge. It is also found that its sensitivity for different states are depend on its configuration.

\quad This work presents an important evaluation of the innovative device for the progress of the sophisticated turbine control including active flow control technologies on the blade.

\quad I strongly recommend this paper for publication with however revised to raise the reliability of the work. I hope the following comments help the authors for their revision.

\noindent{\bf Specific comments}

\quad The authors failed to convince readers the above explanation in Section 3 because there are no data. The authors should show the pressure distribution taken in this experiment to show the flow separation state for each slope of CI. \par

\quad The inconsistency between CIs in Figure 8, 9 is also confusing for the readers to believe the reliability of this manuscript. \par

\quad CI's for Figure 10-12 seems to use the same data. The authors should show measured CI slope for each experiment as explained in I.126 to show the ability of the sensor to detect the slope for each configuration. Otherwise, the authors should show the slope for each configuration are the same in another Figure. \par

\quad The authors should explain some features in Figures to make them reliable. For Figure 12, the authors should explain the reason why the Mean LENS signal is 0.1 for low AOAs. For Figure 13, the authors should explain the possibility of interaction of the Shell of the sensor for the Standard deviation of TENS signal at low AOAs \par

\noindent{\bf Technical corrections}

I pointed out many errors or strange phrases as follows. I strongly recommend the review by a native English speaker.

- Title: High Reynolds investigation -> High Reynolds number investigation \\

- P.1, l.3: high Reynolds -> high Reynolds number

- P.1, l.10: strong shears upstream of the rotor due to a malfunction of the wind turbine
-> I recommend checking the phrases. \\

- P.1, l.11: In order to limit the influence of these disturbances on the wind turbine, modern pitch-regulated wind turbines are operational today. -> Is this means the IPC system? \\

- P.1, l.15: The former -> The latter? \\

- P.1, l.17: rotation -> adjustment? \\

- P.2, l.25: silicon -> silicone \\

- P.2, l.32: high Reynolds -> high Reynolds number \\

- P.2, l.33: 8.85 -> 8.85 x \\

- P.3, l.56: framework -> coordinate axis? \\

- P.3, l.56: y is -> y in \\

- P.3, l.68: silicon -> silicone \\

- P.3, l.72: high Reynolds -> high Reynolds number \\

- P.3, l.73: lift coefficient -> lift coefficient variations? \\

- P.3, l.73: angle of incidence -> AOA? Use the same words throughout the manuscript. \\

- P.4, Figure 4.: Also show a picture of the TENSS type for the readers understanding. \\

- P.4, l.80: What is "this last position"? \\

- P.4, l.86: "the more rigid the strip is, the less signal is transmitted" Is this a result of the experiment? \\

- P.4, l.87: "by keeping only the central part of the strip that is thicker" Add a picture in Figure.4 to understand this phrase. \\

- P.4, l.91: slope modifications -> slope? \\

- P.5, l.96: "which may be at the origin of some discrepancies in the exact values of the separations angles." -> discrepancies from what? \\

- P.5, l.98: separation -> separation point? \\

- P.5, l.102: separated < -> attached? \\

- P.5, l.102: separated < -> attached? \\

- P.5, l.108: not always -> Did you repeat the test? \\

- P.5, Figure 8: Make clear the border line of the figure. \\

- P.6, Figure 9: Make clear the border line of the figure. \\

- P.6, I.115: pressure distributions -> How do you know the pressure distribution from the lines? \\

- P.6, I.118: There is not any significant difference -> There are indeed differences. \\

- P.6, I.121: slope change -> slope? \\

- P.10, I.135: show the region of the transition flow state in Figure 10. \\

- P.10, I.147: low Reynolds -> low Reynolds number \\

- P.10, Figure 10: Add proper labels and units on each axis. \\

- P.11, I.154: Define A and T. \\

- P.11, I.170: Refer Figure 12 in this subsection. \\

- P.11, I.171: trailing -> leading \\

- P.12, Figure 11: Add proper labels and units on each axis. \\

- P.13, Figure 12: Add proper labels and units on each axis. \\

- P.12, Figure 12: Add proper labels and units on each axis. \\

- P.14, l.205: shared is -> shared

- P.15, l 213:Bartholomay2018 -> Correct the title.\\

- P.15, l 233: Shaquarin2013 -> Correct the authors.\\

- P.15, l 241: Swytink2016 -> Correct the title.\\