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Interactive comment on "An innovative method to calibrate a spinner anemometer without use of yaw position sensor" *by* G. Demurtas and N. G. Cornelis Janssen

Anonymous Referee #1

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General comments:

This paper is about a new calibration method for spinner anemometers. A spinner anemometer is a combination of three sonic anemometer mounted on the spinner surface of a wind turbine's spinner to measure the horizontal wind speed, the yaw misalignment and the flow inclination angle. T.F. Pedesen, G. Demurtas and F. Zahal (2015) [Wind Energy, 2015, 18:1933-1952] have already developed 5 methods to calibrated a spinner anemometer with however a need of a yaw measurement as a reference. The present calibration methods do not need a reference yaw position sensor, which is not always available in field measurements.

Therefore, the contribution of the authors is of interest for practical implementation of spinner anemometers. The new methods, which consist in keeping a linear relationship between the horizontal wind speed, U_{hor}, and the yaw misalignment angle ,γ , using adjustment of the calibration coefficient F_α, is relatively simple but certainly extracted from a long experience on spinner anemometers from authors. The validation was performed for a large field measurements data-set, on real wind turbines, which allows a sensibility analysis and demonstrates its feasibility.

Major issues:

However, there is no sufficient informations given by the authors to evaluate the method on the present paper. The introduction of the present work is particularly small and poor. Indeed, the main objective of the paper is to adjust the calibration coefficient F_α using a linear "a priori" on the evolution of U_{hor} with γ. However, the introduction is so short that we don't have the basic relationship between the calibration coefficient and the measured sonic velocity (and other useful definitions, see detailed questions). Also, the example given to demonstrate the method is simplified (yaw misalignment equals the inflow angle), what is the influence of the tilt angle and the flow inclination ? At last, equation 2 (p3, L8), which is the heart of the method, do not express what is written in L6 and L7 (where is $U_{hor,d}$?).

The global presentation quality of figures and especially notations of ordinates and abscissa are of poor quality (please match notation in the text).

For these above reasons I recommend the paper after major revisions.

See attached file for detailed review.

Please also note the supplement to this comment:
http://www.wind-energ-sci-discuss.net/wes-2016-10/wes-2016-10-RC1-supplement.pdf

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