Investigating the performance deviation and consistency between RNRG’s Class 1 anemometer and #40C type anemometer.

Twelve weather monitoring stations (lattice type) having data periods ranging from 12 to 30 months with #40C and Class 1 anemometers at one height and another pair of Class 1 at another height are used for this assessment. All the sensors were calibrated and new at the time of deployment and the booms were mounted on each mast with orientations designed to mitigate the effects of tower-induced flow distortions on the measurements from the most frequent wind directions. The mounting arrangements of all the masts are consistent with IEC recommendations. Wind Data is used after screening to eliminate the effect of tower shadow.

Also a comparison study has been undertaken between all the anemometers available at different heights i.e. 3 class 1’s and one #40C. Differences in the dynamic response of the class 1 anemometer and the NRG #40C are well documented which includes the comparison of wind speed, turbulence intensity and correlation coefficient of both anemometers. Data of two monitoring stations were not included in the final results as they were not in the typical expected range.

Based on post-deployment field investigation followed by analysis, it was inferred that there is a variation in performance of #40C & class 1 anemometers. For the same height, wind speed recorded by using class 1 was higher than that recorded by using #40C .It was found that on an average, the class 1 recorded wind speeds were 2% higher than that recorded by #40C with no significant difference in turbulence intensity. However the correlation was more than 99%. Since RNRG Class 1 anemometer is an advanced version of RNRG #40C anemometer, the performance improvement can be expected. More data is required to further judge the performance characteristics of Class 1 anemometer against #40C. The investigation will be resumed once when more data is available for analysis.

Based on post-deployment field investigation followed by analysis, it was concluded that there is variation in performance of #40C & class 1 anemometers.

References

3. Characterization and Classification of the NRG Class 1 Anemometer for IEC 61400-12-1 Compliance, Renewable NRG Systems.