Comments on "Anemometer Performance Determined by ASTM Methods"

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Since I characterized rotating anemometers many years ago using techniques similar to those described by Lockhart (1987), I read his paper with a great deal of interest and was pleased to see the procedures meaningfully standardized.

However, in his "Summary and conclusions," Lockhart made a misleading proposal when he "... suggested that a test for L_d be added to the ASTM method. The proposed method for this additional test is to mechanically rotate the aerodynamic shape at a rate equivalent to the speed used for the determination of L_d , quickly remove the cause of rotation (motor or finger), and record the deceleration of the anemometer in a still environment. The difference in time between the 30% and 74.2% response to the decreasing step

change times the equivalent speed is L_d . This test could be conducted in a wind tunnel operating at about 0.3 m s^{-1} to remove the vortex caused by the mechanically driven cups."

I have difficulty with the suggestion for two reasons. First, as Lockhart clearly recognized earlier in the paper, distance constant is computed using the final equilibrium speed, not the initial speed stated in the proposed method. Second, distance constant is an aerodynamic concept and should not be confounded with the frictional effects. With any but the most carefully constructed and maintained rotating anemometer, a final equilibrium wind speed of 0.3 m s^{-1} would never be attained. I would expect most currently available rotating anemometers to stall at higher speeds.

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REFERENCE

Lockhart, T. J., 1987: Anemometer performance determined by ASTM methods. *J. Atmos. Oceanic Technol.*, **4**, 160–169.