

ANEMOMETER CALIBRATION REPORT

Customer: NRG Systems, Inc.

This document reports that a wind tunnel test was performed for the anemometer listed below in accordance with transfer function protocols defined by ASTM D 5096-02, ISO 17713-1, and IEC 61400-12-1. The following data and transfer function is the relationship between the reference wind speed measurement in the wind tunnel test section and the unadjusted signal output from the instrument under test (IUT) given the prescribed speed range.

IUT Model No: NRG #40
IUT Serial No: 179500046331
IUT Output: AC Sine Wave

Test Date and Time: 9/19/07 9:00 PM
Test Speed Range: 4 - 26 m/s

Wind Tunnel Test Facility

Otech Tunnel ID: WT2B
 Type: Eiffel (open circuit, suction)
 Test Section Size: 0.61 m x 0.61 m x 1.22 m
 Manufacturer: Engineering Laboratory Design, Inc.

Data Acquisition

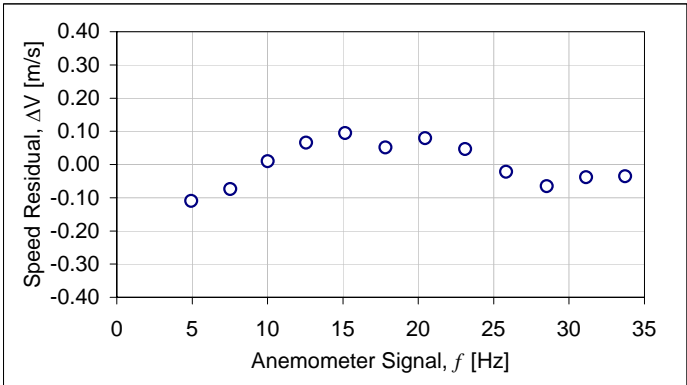
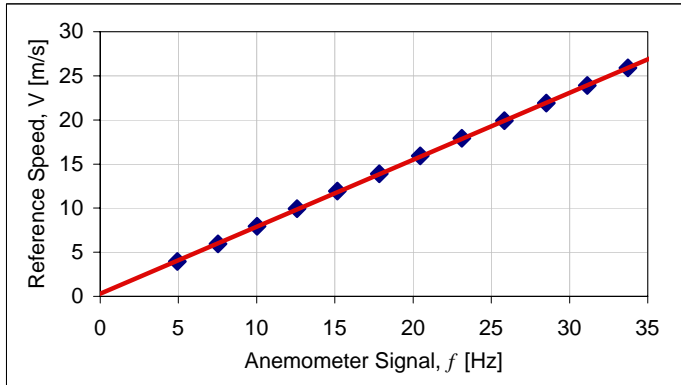
Hardware: National Instruments CDAQ-9172 USB 2.0 chassis
 with NI 9205 32-chan 16-bit AI module
 Software: National Instruments LabVIEW 8.2.1
 Signal Reduction Method for IUT: FFT to determine frequency

Measuring Equipment

Reference Speed: Four United Sensor Type PA Pitot-static tubes sensed by an MKS Barotron Type 220D Differential Pressure Transducer (NIST traceable)
 Amb. Pressure: Setra Model 270 Barometer (NIST traceable)
 Amb. Temperature: OMEGA HX94 SS Probe (NIST traceable)
 Relative Humidity: OMEGA HX94 SS Probe (NIST traceable)

Test Conditions

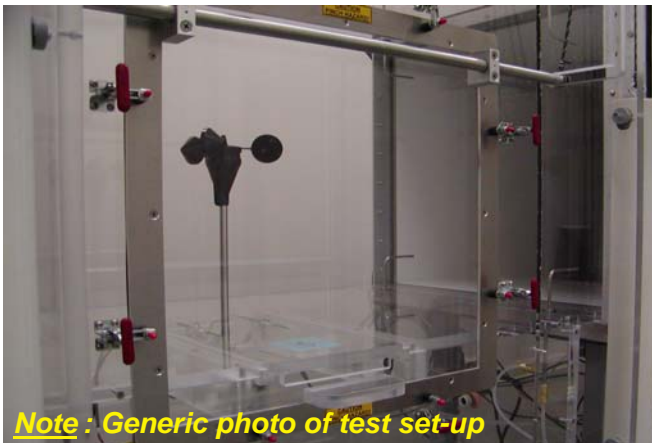
Reference Speed Position Correction = 1
 Reference Speed Blockage Correction = 1
 Mean Ambient Pressure = 100658 Pa
 Mean Ambient Temperature = 26 deg C
 Mean Relative Humidity = 33.7% RH
 Mean Density = 1.1673 kg/cubic meter



Transfer Function
Test Results:

$V \text{ [m/s]} = 0.759 f \text{ [Hz]} + 0.32$

r = 0.99996 std. err. estimate = 0.0704 m/s



Note: Generic photo of test set-up

Reference Speed [m/s]	Anemometer Output [Hz]	Residual [m/s]	Ref. Speed Uncertainty
3.954	4.935	-0.110	0.516%
7.929	10.014	0.010	0.483%
11.923	15.163	0.095	0.475%
15.932	20.465	0.079	0.476%
19.900	25.826	-0.023	0.473%
23.914	31.134	-0.038	0.470%
25.888	33.732	-0.036	0.469%
21.902	28.519	-0.065	0.468%
17.912	23.115	0.046	0.475%
13.906	17.832	0.051	0.475%
9.928	12.573	0.066	0.481%
5.962	7.533	-0.074	0.482%