OTECH ENGINEERING INC.

630 Peña Drive, Suite 800
Davis, CA 95618
530.757.2264
www.otechwind.com

ANEMOMETER CALIBRATION REPORT

Customer Name: NRG Systems, Inc.
Customer Address: 110 Riggs Rd, Hinesburg, VT 05461

This document reports that a calibration or transfer function test was performed in a wind tunnel for the instrument specified below. The test was done in accordance with current industry standards and Otech Laboratory and Calibration Procedures. The following data and resulting 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: 179500104999
IUT Output: AC Sine Wave

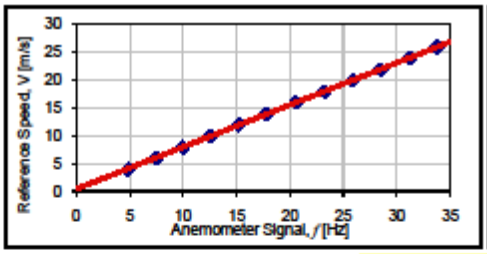
Test Date and Time: 3/24/09 2:04 PM
Test Speed Range: 4 - 26 m/s

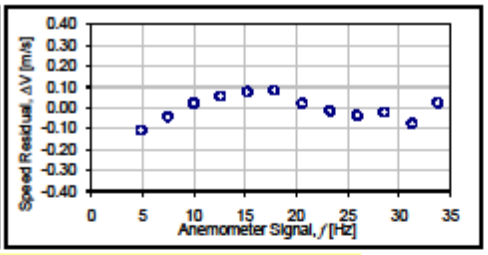
Wind Tunnel Test Facility
Otech Tunnel ID: WT2B
Type: Eiffel (open circuit, suction)
Test Section Size: 0.61 m x 0.61 m x 1.22 m
Manufacturer: Engineering Laboratory Design, Inc.

Data Acquisition
Hardware: National Instruments CDAQ-9172 USB 2.0 chassis with NI 9205 32-chan 16-bit AI module
Software: National Instruments LabVIEW 8.5
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)

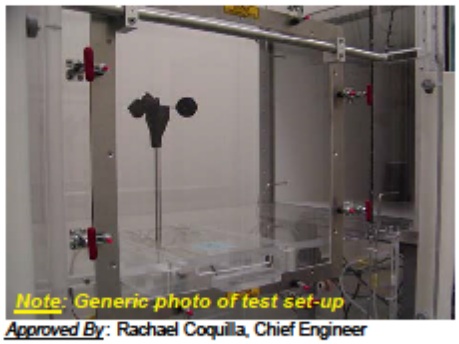
Test Conditions
Reference Speed Position Correction = 1
Reference Speed Blockage Correction = 1
Mean Ambient Pressure = 102012 Pa
Mean Ambient Temperature = 23 deg C
Mean Relative Humidity = 30.8% RH
Mean Density = 1.1962 kg/cubic meter





Transfer Function Test Results: **V [m/s] = 0.757 f [Hz] + 0.38**

r = 0.99997 std. err. estimate = 0.0626 m/s



Reference Speed [m/s]	Anemometer Output [Hz]	Residual [m/s]	Ref. Speed Uncertainty
3.958	4.873	-0.107	0.461%
7.938	9.960	0.023	0.464%
11.947	15.185	0.078	0.468%
15.963	20.565	0.022	0.470%
19.926	25.881	-0.037	0.466%
23.956	31.255	-0.075	0.481%
25.949	33.755	0.026	0.469%
21.931	28.507	-0.020	0.484%
17.971	23.265	-0.013	0.471%
13.933	17.799	0.085	0.476%
9.941	12.560	0.058	0.477%
5.971	7.445	-0.041	0.470%

Approved By: Rachael Coquilla, Chief Engineer

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References available upon request. Page 1 of 1 179500104999 2009-03-24.pdf

Figure B-5 Calibration report for A3

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ANEMOMETER CALIBRATION REPORT

Customer Name: NRG Systems, Inc.
Customer Address: 110 Riggs Rd, Hinesburg, VT 05461

This document reports that a calibration or transfer function test was performed in a wind tunnel for the instrument specified below. The test was done in accordance with current industry standards and Otech Laboratory and Calibration Procedures. The following data and resulting 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: 179500104988
IUT Output: AC Sine Wave

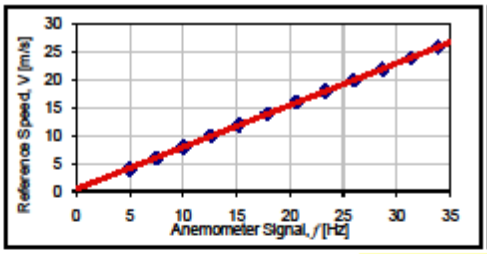
Test Date and Time: 3/24/09 11:47 AM
Test Speed Range: 4 - 26 m/s

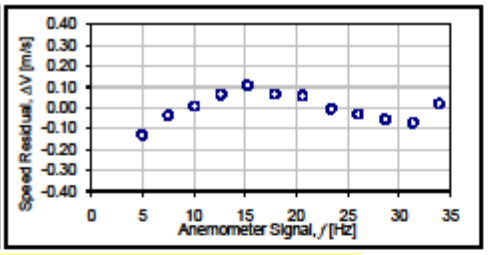
Wind Tunnel Test Facility
Otech Tunnel ID: WT2B
Type: Eiffel (open circuit, suction)
Test Section Size: 0.61 m x 0.61 m x 1.22 m
Manufacturer: Engineering Laboratory Design, Inc.

Data Acquisition
Hardware: National Instruments CDAQ-9172 USB 2.0 chassis with NI 9205 32-chan 16-bit AI module
Software: National Instruments LabVIEW 8.5
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)

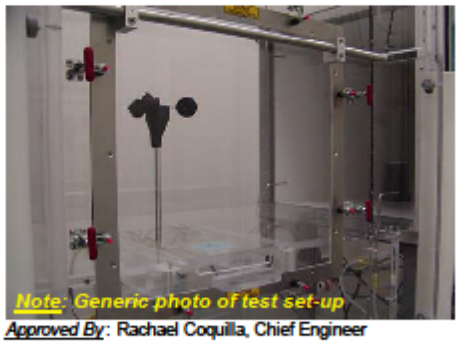
Test Conditions
Reference Speed Position Correction = 1
Reference Speed Blockage Correction = 1
Mean Ambient Pressure = 102218 Pa
Mean Ambient Temperature = 21.5 deg C
Mean Relative Humidity = 28.9% RH
Mean Density = 1.2055 kg/cubic meter





Transfer Function Test Results: **V [m/s] = 0.755 f [Hz] + 0.35**

r = 0.99996 std. err. estimate = 0.0708 m/s



Reference Speed [m/s]	Anemometer Output [Hz]	Residual [m/s]	Ref. Speed Uncertainty
3.966	4.955	-0.128	0.477%
7.944	10.042	0.008	0.461%
11.950	15.214	0.107	0.462%
15.964	20.592	0.058	0.473%
19.926	25.954	-0.029	0.492%
23.948	31.331	-0.070	0.463%
25.953	33.868	0.019	0.476%
21.926	28.636	-0.056	0.460%
17.983	23.347	-0.004	0.473%
13.934	17.895	0.066	0.480%
9.943	12.614	0.064	0.466%
5.982	7.503	-0.036	0.493%

Approved By: Rachael Coquilla, Chief Engineer

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References available upon request. Page 1 of 1 179500104988 2009-03-24.pdf

Figure B-6 Calibration report for A4

OTECH ENGINEERING INC.

630 Peña Drive, Suite 800
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ANEMOMETER CALIBRATION REPORT

Customer Name: NRG Systems, Inc.
Customer Address: 110 Riggs Rd, Hinesburg, VT 05461

This document reports that a calibration or transfer function test was performed in a wind tunnel for the instrument specified below. The test was done in accordance with current industry standards and Otech Laboratory and Calibration Procedures. The following data and resulting 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: 179500104980
IUT Output: AC Sine Wave

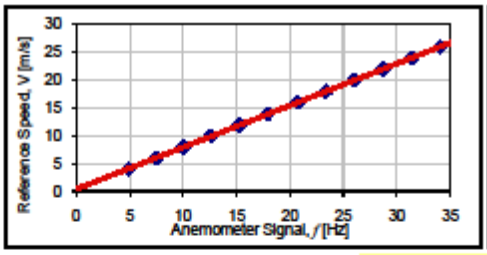
Test Date and Time: 3/24/09 10:16 AM
Test Speed Range: 4 - 26 m/s

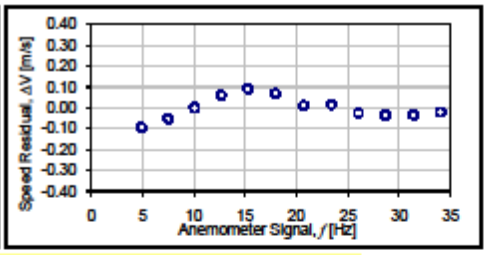
Wind Tunnel Test Facility
Otech Tunnel ID: WT2B
Type: Eiffel (open circuit, suction)
Test Section Size: 0.61 m x 0.61 m x 1.22 m
Manufacturer: Engineering Laboratory Design, Inc.

Data Acquisition
Hardware: National Instruments CDAQ-9172 USB 2.0 chassis with NI 9205 32-chan 16-bit AI module
Software: National Instruments LabVIEW 8.5
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)

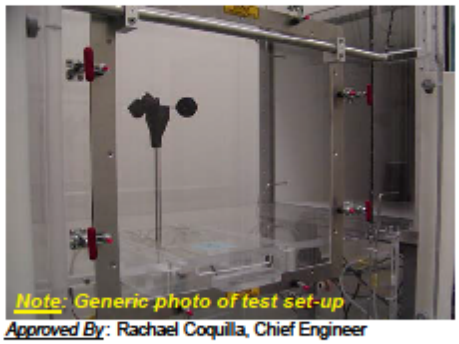
Test Conditions
Reference Speed Position Correction = 1
Reference Speed Blockage Correction = 1
Mean Ambient Pressure = 102292 Pa
Mean Ambient Temperature = 20.7 deg C
Mean Relative Humidity = 27.7% RH
Mean Density = 1.2098 kg/cubic meter





Transfer Function Test Results: **V [m/s] = 0.752 f [Hz] + 0.38**

r = 0.99997 std. err. estimate = 0.0564 m/s



Reference Speed [m/s]	Anemometer Output [Hz]	Residual [m/s]	Ref. Speed Uncertainty
3.967	4.896	-0.094	0.461%
7.948	10.058	0.002	0.470%
11.946	15.253	0.092	0.474%
15.965	20.703	0.012	0.473%
19.941	26.036	-0.025	0.467%
23.971	31.400	-0.031	0.468%
25.973	34.045	-0.019	0.470%
21.931	28.692	-0.034	0.465%
17.988	23.383	0.018	0.464%
13.937	17.931	0.069	0.469%
9.945	12.636	0.061	0.469%
5.977	7.509	-0.050	0.477%

Approved By: Rachael Coquilla, Chief Engineer

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References available upon request. Page 1 of 1 179500104980 2009-03-24.pdf

Figure B-7 Calibration report for A5

OTECH ENGINEERING INC.

630 Peña Drive, Suite 800
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www.otechwind.com

ANEMOMETER CALIBRATION REPORT

Customer Name: NRG Systems, Inc.
Customer Address: 110 Riggs Rd, Hinesburg, VT 05461

This document reports that a calibration or transfer function test was performed in a wind tunnel for the instrument specified below. The test was done in accordance with current industry standards and Otech Laboratory and Calibration Procedures. The following data and resulting 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: 179500104982
IUT Output: AC Sine Wave

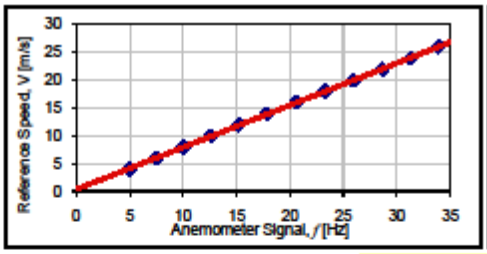
Test Date and Time: 3/24/09 10:37 AM
Test Speed Range: 4 - 26 m/s

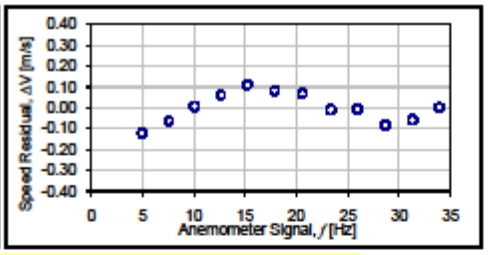
Wind Tunnel Test Facility
Otech Tunnel ID: WT2B
Type: Eiffel (open circuit, suction)
Test Section Size: 0.61 m x 0.61 m x 1.22 m
Manufacturer: Engineering Laboratory Design, Inc.

Data Acquisition
Hardware: National Instruments CDAQ-9172 USB 2.0 chassis with NI 9205 32-chan 16-bit AI module
Software: National Instruments LabVIEW 8.5
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)

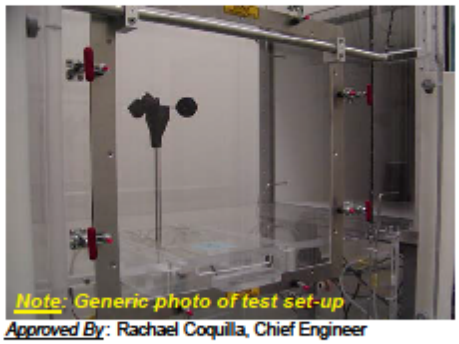
Test Conditions
Reference Speed Position Correction = 1
Reference Speed Blockage Correction = 1
Mean Ambient Pressure = 102277 Pa
Mean Ambient Temperature = 20.9 deg C
Mean Relative Humidity = 27.9% RH
Mean Density = 1.209 kg/cubic meter





Transfer Function Test Results: **V [m/s] = 0.756 f [Hz] + 0.34**

r = 0.99995 std. err. estimate = 0.0751 m/s



Reference Speed [m/s]	Anemometer Output [Hz]	Residual [m/s]	Ref. Speed Uncertainty
3.969	4.961	-0.121	0.495%
7.942	10.047	0.008	0.465%
11.944	15.203	0.112	0.465%
15.965	20.577	0.070	0.466%
19.928	25.918	-0.005	0.499%
23.953	31.312	-0.057	0.458%
25.966	33.897	0.001	0.471%
21.922	28.657	-0.081	0.472%
17.975	23.340	-0.009	0.467%
13.926	17.862	0.083	0.471%
9.936	12.613	0.062	0.479%
5.979	7.542	-0.063	0.469%

Approved By: Rachael Coquilla, Chief Engineer

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References available upon request. Page 1 of 1 179500104982 2009-03-24.pdf

Figure B-8 Calibration report for A6

C. ANNEX - WIND MEASUREMENTS AND RESULTS

		A1		A2		A3		A4		A5		A6	
Year	Month	Coverage (%)	Mean (m/s)	Coverage (%)	Mean (m/s)	Coverage (%)	Mean (m/s)	Coverage (%)	Mean (m/s)	Coverage (%)	Mean (m/s)	Coverage (%)	Mean (m/s)
2009	Jul	93.55	7.0915	93.55	6.9473	93.55	6.6333	93.53	6.7428	93.46	6.2945	93.55	6.3554
2009	Aug	100	5.9025	99.51	5.792	99.51	5.5833	98.66	5.5676	97.74	5.3547	99.78	5.3435
2009	Sep	100	4.9763	100	4.896	100	4.7854	97.25	4.8334	94.72	4.6247	99.91	4.6433
2009	Oct	100	5.0078	100	4.941	100	4.7889	96.57	4.9042	94.4	4.6339	99.73	4.6516
2009	Nov	100	4.2048	99.98	4.1634	99.98	4.1262	93.31	4.1741	88.87	3.9893	98.47	4.0307
2009	Dec	100	5.1379	99.84	5.0485	99.84	4.8971	96.48	5.0274	94.47	4.7304	97.8	4.7046
2010	Jan	100	4.8784	100	4.7955	100	4.6627	95.27	4.76	92.54	4.4862	99.89	4.4858
2010	Feb	100	4.212	99.43	4.1861	99.43	4.1343	94.35	4.2087	92.41	4.025	96.3	4.0326
2010	Mar	100	4.996	100	4.9529	100	4.8594	93.95	4.8881	91.13	4.6734	97.76	4.6713
2010	Apr	100	4.8673	99.33	4.8195	99.33	4.6992	91.9	4.5879	88.59	4.409	98.29	4.5436
2010	May	100	5.201	98.36	5.1117	98.36	4.9869	97.18	5.0505	95.65	4.7956	98.84	4.7497
2010	Jun	100	5.1303	100	5.0299	100	4.8715	98.61	4.8931	97.36	4.6869	99.63	4.6542
2010	Jul	100	5.7841	100	5.6564	100	5.4306	98.39	5.486	97.78	5.1616	99.84	5.1876
2010	Aug	100	4.8121	98.54	4.6443	98.54	4.5329	95.18	4.6542	92.61	4.488	98.5	4.4883
2010	Sep	100	4.7088	97.41	4.6393	97.41	4.5383	93.26	4.6646	91.57	4.445	97.8	4.4126
2010	Oct	100	4.5368	98.3	4.5141	98.3	4.4192	93.01	4.4802	90.55	4.3617	98.52	4.2888
2010	Nov	100	4.9397	99.42	4.9009	99.47	4.6625	93.8	4.815	92.36	4.4122	97.59	4.4679
2010	Dec	100	4.563	99.57	4.5406	99.57	4.4233	87.59	4.4605	82.5	4.167	99.08	4.2566
2011	Jan	100	5.59	99.98	5.4881	99.98	5.2983	99.8	5.3688	98.79	5.0329	99.71	5.0652
2011	Feb	100	6.0502	99.93	5.9281	99.93	5.7234	97.45	5.8148	96.33	5.4533	99.63	5.4079
2011	Mar	100	5.194	99.78	5.1559	99.78	5.0249	93.21	5.062	89.16	4.7879	99.46	4.8395

		A1		A2		A3		A4		A5		A6	
Year	Month	Coverage (%)	Mean (m/s)	Coverage (%)	Mean (m/s)	Coverage (%)	Mean (m/s)	Coverage (%)	Mean (m/s)	Coverage (%)	Mean (m/s)	Coverage (%)	Mean (m/s)
2011	Apr	99.86	5.4085	99.63	5.3297	99.63	5.2069	92.94	5.3095	90.79	5.0966	97.34	4.9922
2011	May	100	4.0883	99.89	4.0579	99.89	4.0109	93.35	3.983	89.45	3.964	98.16	3.8099
2011	Jun	100	5.2817	100	5.1777	100	5.0185	96.41	5.0661	94.51	4.8344	98.82	4.7967
2011	Jul	100	5.7449	99.96	5.6026	99.96	5.4123	98.45	5.3766	97.42	5.1531	99.98	5.1512
2011	Aug	100	5.9446	99.96	5.8359	99.96	5.5966	98.01	5.6855	96.59	5.3883	98.77	5.3086
2011	Sep	100	4.5104	99.91	4.4478	99.91	4.3517	96.39	4.2869	95.21	4.1556	98.84	4.2284
2011	Oct	100	5.0654	100	4.9893	100	4.805	100	4.7999	100	4.5774	100	4.684

Table C-1 Monthly Data and coverage for Rokem Mast