



LABORATORY/OFFICE:
 54043 County Rd. 37
 Nunn, Colo. 80648
 Phone: 970-897-2711
 FAX: 970-897-2710

COLORADO ENGINEERING EXPERIMENT STATION INC.

...the primary source for flow measurement solutions...



NVLAP LAB CODE 200377-0

CERTIFICATE OF CALIBRATION

Traceable to the
 NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY

Customer:	Item Calibrated: Turbine Flow Meter
Address:	
	Serial Number:
Date:	Order:
	Job Number:
CEESI Data File(s):	Report Number:

The uncertainty in the flowrate indicated by CEESI standards is contained in this report under *Statement of Uncertainties*.

The calibration(s) identified by the above CEESI DATA FILE (S) were performed using standards that are traceable to the National Institute of Standards and Technology. The calibration(s) were performed in accordance with any or all of the following: The current revision of CEESI PROCEDURE NO. 10 ; NIST Handbook 150 (NVLAP accreditation under NVLAP lab code 200377-0); ISO/IEC 17025:1999; ANSI/NCSS Z540-1-1994; and Former MIL-STD-45662A. The stated uncertainties were calculated in accordance with the current revision of CEESI Report "Calibration Services Uncertainty Analyses".

Calibration Method	<input type="checkbox"/> Primary	<input checked="" type="checkbox"/> Secondary
This calibration is:	<input checked="" type="checkbox"/> As Found	<input checked="" type="checkbox"/> As Left

Casey Hodges - Engineering Manager

NOTES:

1. Re-calibration intervals should be determined by the user and based on meter type, conditions of use, and the degree of risk associated with the measurement. Please contact CEESI for guidance in establishing adequate re-calibration intervals.
2. This Certificate and accompanying documentation shall not be reproduced, except in full, without the written consent of Colorado Engineering Experiment Station Inc. The signing of the document does not claim or imply product certification, approval, or endorsement by NVLAP, NIST, CEESI, or any agency of the federal government.



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IOWA HIGH FLOW FACILITY
 2365 240th St.
 Garner, IA 50438
 Phone: 641-923-3664
 FAX: 641-923-3693

Calibration of a Turbine Flow Meter

Model: Serial Number:

For: Order:

Data File: Job: Date:

Inlet Diameter: 1.5 inches

Test gas: AIR Standard density= 0.074896 lbm/ft³
 at standard conditions of 529.67 °R, and 14.696 Psia

Freq: Meter Output, Hertz (pulses/sec)

ACFM: Volumetric flowrate at meter BODY, actual cubic feet per minute

KFactor: Pulses per cubic foot

ReyNo: Pipe Reynolds number

Density: Flowing density at meter BODY, pounds mass per cubic foot

Pt.	Freq	ACFM	KFactor	ReyNo	Density
1	3708.45	136.49	1630.256	3092097	1.6147
2	3242.49	118.95	1635.593	2733222	1.6293
3	3241.59	118.91	1635.681	2732548	1.6292
4	2961.36	108.44	1638.592	2492738	1.6289
5	2686.86	98.21	1641.524	2255981	1.6287
6	2685.93	98.18	1641.382	2256242	1.6288
7	2355.53	85.94	1644.493	1970483	1.6274
8	2056.69	74.96	1646.269	1710448	1.6229
9	2056.64	74.93	1646.764	1709633	1.6225
10	1736.84	63.18	1649.335	1433779	1.6174
11	1440.98	52.32	1652.549	1176702	1.6089
12	1441.12	52.33	1652.279	1176804	1.6088
13	1145.03	41.55	1653.278	925653	1.5998
14	818.31	29.68	1654.498	652014	1.5862
15	818.31	29.68	1654.379	651528	1.5852
16	509.04	18.50	1650.603	394498	1.5585
17	180.77	6.61	1641.935	137924	1.5392
18	180.82	6.60	1643.09	137811	1.5391



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STATEMENT OF UNCERTAINTIES

Calibration of a Turbine Flow Meter

Model: Serial Number:

For: Order:

Data File: Job: Date:

Freq: Uncertainty in Frequency at a 95% confidence(%)

ACFM: Uncertainty in Volume Flowrate at a 95% confidence(%)

KFactor: -

ReyNo: Uncertainty in Reynolds Number at a 95% confidence(%)

Density: Uncertainty in Density at a 95% confidence(%)

Pt.	Freq	ACFM	KFactor	ReyNo	Density
1	0.0102	0.348	-	2.027	0.107
2	0.0100	0.345	-	2.027	0.107
3	0.0100	0.345	-	2.027	0.107
4	0.0100	0.342	-	2.026	0.107
5	0.0100	0.340	-	2.026	0.107
6	0.0100	0.340	-	2.026	0.107
7	0.0100	0.336	-	2.025	0.107
8	0.0100	0.333	-	2.025	0.107
9	0.0100	0.333	-	2.025	0.107
10	0.0100	0.329	-	2.024	0.107
11	0.0100	0.326	-	2.024	0.107
12	0.0100	0.326	-	2.024	0.107
13	0.0100	0.321	-	2.023	0.107
14	0.0100	0.316	-	2.022	0.107
15	0.0100	0.316	-	2.022	0.107
16	0.0100	0.311	-	2.021	0.107
17	0.0100	0.304	-	2.020	0.107
18	0.0100	0.304	-	2.020	0.107