



CERTIFICATE OF ACCREDITATION

ANSI National Accreditation Board
11617 Coldwater Road, Fort Wayne, IN 46845 USA

This is to certify that

Graftel
870 Cambridge Drive
Elk Grove Village, IL 60007

has been assessed by ANAB and meets the requirements of international standard

ISO/IEC 17025:2005

and national standards

ANSI/NCSL Z540-1-1994 (R2002) and
ANSI/NCSL Z540.3-2006 (R2013)

while demonstrating technical competence in the field of

CALIBRATION

Refer to the accompanying Scope of Accreditation for information regarding the types of activities to which this accreditation applies

L2115-1
Certificate Number


ANAB Approval

Certificate Valid Through: 03/28/2020
Version No. 004 Issued: 04/12/2019



This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communiqué dated April 2017).



**SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005,
ANSI/NCSL Z540-1-1994 (R2002) AND ANSI/NCSL Z540.3-2006 (R2013)**

Graftel

870 Cambridge Drive
Elk Grove Village, IL 60007
David Glover 847-364-2600

CALIBRATION

Valid to: **March 28, 2020**

Certificate Number: **L2115-1**

Mass and Mass Related

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Gas Flow Rate	200 sccm to 6 slm	0.15 % of reading	Balance and timer – Gravimetric method
Gas Flow Rate	1 sccm to 24 slm	0.28 % of reading	Flow Tubes
Gas Flow Rate	(24 to 141 584) slm	0.21 % of reading	Sonic Nozzles
Gas Flow Rate ¹	1 sccm to 1 274 slm	0.5 % of reading	Laminar Elements
Gas Flow Rate ¹	(205 to 1 415) slm (566 to 4 247) slm (3 029 to 17 546) slm	0.46 % of reading 0.46 % of reading 0.46 % of reading	Coriolis Flow Systems
Liquid Flow Rate	1 ccm to 300 lpm	0.06 % of reading	Weighing Method
Liquid Flow Rate	(300 to 3 407) lpm	0.064 % of reading	Gravimetric method
Liquid Flow Rate	(189 to 3 407) lpm	0.1 % of reading	Coriolis Flow System
Liquid Flow Rate ¹	(0.06 to 400) lpm	0.1 % of reading	Coriolis Flow System
Liquid Flow Rate ¹	(2 to 48) in lines	1 % of reading	Ultrasonic Flow Meters
Liquid Flow Rate	(0 to 30) fps	0.7 % of reading	Remote Calibration Module (RCM)
Air Velocity	(2 to 50) m/s	1.3 % of reading + 0.01 m/s	Wind Tunnel Pitot Tube
Air Velocity	(0.5 to 50) m/s	1.3 % of reading + 0.01 m/s	Sonic Nozzles

Mass and Mass Related

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Air Velocity	(2 to 50) m/s ¹	2 % of reading + 0.01 m/s	Pitot Tube
Air Velocity	(2 to 45) m/s ¹	2.2 % or reading	3D Ultrasonic Anemometer
Pressure	(1.7 to 100) psi (2 to 1 000) psi	0.001 % of reading + 0.000 4 psi 0.002 6 % of reading + 0.000 4 psi	Ruska 2465 Deadweight Pressure Calibrator
Pressure ¹	(500 to 1 100) hPa	0.123 hPa	Vaisala Pressure Transducer
Pressure ¹	(0 to 100) psia (100 to 1 000) psia	0.011 psia 0.102 psia	Paroscientific 760 Pressure Transmitter
Differential Pressure ¹	(-250 to -30) inH ₂ O@4 °C (-30 to -10) inH ₂ O@4 °C (-10 to 0.025) inH ₂ O@4 °C (0.025 to 10) inH ₂ O@4 °C (10 to 30) inH ₂ O@4 °C (30 to 250) inH ₂ O@4 °C	0.11 % of reading 0.018 % of reading 0.018 % of reading 0.019 % of reading 0.019 % of reading 0.018 % of reading	Fluke 7252i Pressure Controller

Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
DC Current-Measure ¹	(0 to 200) μA (0.2 to 2) mA (2 to 20) mA (20 to 200) mA (0.2 to 2) A	0.042 % reading + 0.02 μA 0.023 % reading + 0.2 μA 0.056 % reading + 8 μA 0.041 % reading + 32 μA 0.12 % reading + 0.8 mA	Fluke 8808A Digital Multimeter
Resistance Measurement ¹	(0 to 200) Ω (0.2 to 2) kΩ (2 to 200) kΩ (0.2 to 2) MΩ	0.036 % reading + 0.016 Ω 0.037 % reading + 0.069 Ω 0.042 % reading + 0.012 Ω 0.095 % reading + 0.07 Ω	Fluke 8808A Digital Multimeter
DC Voltage-Measure ¹	(0 to 200) mV (0.2 to 2) V (2 to 20) V (20 to 200) V	0.18 % reading + 0.009 mV 0.02 % reading + 0.12 mV 0.04 % reading + 1.6 mV 0.026 % reading + 12 mV	Fluke 8808A Digital Multimeter



Thermodynamic

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Relative Humidity	(10 to 95) % RH	1.1 % RH	Thunder Scientific 1200 Humidity Chamber
Temperature – Measuring Equipment ¹	(-80 to 95) °C	0.023 °C	Temperature Baths & PRT
Dew Point Temperature	(-80 to -20) °C	0.22 °C	Two Temperature Generator & PRT
	(-20 to 50) °C	0.2 °C	Thunder Scientific 1200 Humidity Chamber

Calibration and Measurement Capability (CMC) is expressed in terms of the measurement parameter, measurement range, expanded uncertainty of measurement and reference standard, method, and/or equipment. The expanded uncertainty of measurement is expressed as the standard uncertainty of the measurement multiplied by a coverage factor of 2 ($k=2$), corresponding to a confidence level of approximately 95%.

Notes:

1. On-site calibration service is available for this parameter, since on-site conditions are typically more variable than those in the laboratory, larger measurement uncertainties are expected on-site than what is reported on the accredited scope
2. This scope is formatted as part of a single document including Certificate of Accreditation No. L2115-1.

Vice President

