INTERNATIONAL ACCREDITATION SERVICE®

CERTIFICATE OF ACCREDITATION

This is to attest that

DICK MUNNS COMPANY

11133 WINNERS CIRCLE
LOS ALAMITOS, CALIFORNIA 90720

Calibration Laboratory CL-122

has met the requirements of AC204, *IAS Accreditation Criteria for Calibration Laboratories*, and has demonstrated compliance with the ISO/IEC Standard 17025:2005, *General requirements for the competence of testing and calibration laboratories*. This organization is accredited to provide the services specified in the scope of accreditation maintained on the IAS website (www.iasonline.org).

This certificate is valid up to April 1, 2021.

(See laboratory's scope of accreditation for fields of calibration and accredited calibration.)

This accreditation certificate supersedes any IAS accreditation bearing an earlier effective date. The certificate becomes invalid upon suspension, cancellation or revocation of accreditation. See www.iasonline.org for current accreditation information, or contact IAS at 562-364-8201.

IAS INTERNATIONAL ACCREDITATION SERVICE®

ilac-MRA

Raj Nathan
President

18-15965

SCOPE OF ACCREDITATION

IAS Accreditation Number	CL-122
Accredited Entity	Dick Munns Company
Address	11133 Winners Circle Los Alamitos, CA, 90720
Contact Name	Pablo L. Acosta
Telephone	+1 (714) 827-1215
Effective Date of Scope	November 15, 2018
Accreditation Standard	ISO/IEC 17025:2005

CALIBRATION AND MEASUREMENT CAPABILITY (CMC)[1,2]

CALIBRATION AREA	RANGE	EXPANDED UNCERTAINTY[3] (±)	TECHNIQUE, REFERENCE STANDARD, EQUIPMENT
Mechanical			
Flow Rate by Volume (H_2O or Hydrocarbon)	0.002 gal/min to 1.0 gal/min	0.17 %	DMC Standard A-6
Turbine Meters	0.002 gal/min to 0.5 gal/min	0.17 %	DMC Standard A-7
PD Meters	0.2 gal/min to 1.0 gal/min	0.10 %	DMC Standard A-10
Mag Meters	0.3 gal/min to 5.0 gal/min	0.10 %	DMC Standard A-28
Rotometers	0.5 gal/min to 15 gal/min	0.10 %	DMC Standard A-33
Vortex Meters	5.0 gal/min to 25 gal/min 5.0 gal/min to 50 gal/min 10 gal/min to 100 gal/min 100 gal/min to 600 gal/min	0.16 % 0.15 % 0.15 % 0.20 %	DMC Standard A-33 DMC Standard A-14 DMC Standard A-710 DMC Standard A-710
Flow Rate	Up to 4 kg/min 0.01 kg/min to 12 kg/min 10 lb/min to 250 lb/min 100 lb/min to 1000 lb/min 500 lb/min to 10000 lb/min	0.1 % FS 0.23 % 0.1 % 0.08 % FS 0.07 lb	DMC Standard A-322 DMC Standard A-70 DMC Standard A-50 DMC Standard A-264 DMC Standard A350
Flow Rate by Volume	10 gal/min to 100 gal/min 100 gal/min to 500 gal/min 600 gal/min to 1000 gal/min 1000 gal/min to 1500 gal/min 100 gal/min to 3000 gal/min	0.01 % 0.012 % 0.015 % 0.017 % 0.15 %	DMC Standard I to IV-A350 DMC Standard A-350 [TRANSFER STDs A3682, A3684 & A770]
Flow Rate by Volume for Compressible Gas	2 cm^3/min to 50000 cm^3/min 0.005 ALPM to 0.090 ALPM 0.060 ALPM to 1.2 ALPM 0.200 ALPM to 12.0 ALPM 12.1 ALPM to 25.0 ALPM	0.12 % 0.19 % 0.19 % 0.17 % 0.19 %	DMC Standard A290 DMC Standard A-100 DMC Standard A-1 DMC Standard A-2 DMC Standard A-3
Flow Rate by			

INTERNATIONAL ACCREDITATION SERVICE®

SCOPE OF ACCREDITATION

CALIBRATION AREA	RANGE	EXPANDED UNCERTAINTY[3] (±)	TECHNIQUE, REFERENCE STANDARD, EQUIPMENT
Volume for Compressible Gas cont.	0.200 ACFM to 10.0 ACFM 10.0 ACFM to 25.0 ACFM 25.0 ACFM to 50.0 ACFM 2.0 ACFM to 150.0 ACFM 160 ACFM to 250.0 ACFM 250 ACFM to 1200 ACFM	0.19 % 0.20% 0.23 % 0.19 % 0.19 % 0.21 %	DMC Standard A-4 DMC Standard A-5
Flow Rate by Volume (Transfer Standard)	1 SCFM to 1036 SCFM 1 SCCM to 1800 SCCM 5 SCCM to 500 SCCM 500 SCCM to 50000 SCCM 0.003 gal/min 2.64 gal/min 0.020 gal/min to 9.25 gal/min 0.150 gal/min to 26.4 gal/min 0.500 gal/min to 50.0 gal/min 0.500 gal/min to 100.0 gal/min 10 gal/min to 600.0 gal/min	0.20 % 0.8 % 0.15 % 0.15 % 0.8 % 0.8 % 0.8 % 0.8 % 0.8 % 0.8 %	DMC Standard A800 DMC Standard A-8 Max Machine Mesa Labs DryCal 800 w/ 2 cells – NIST 250 DMC Standard A-78 DMC Standard A-61 DMC Standard A-58 DMC Standard A-99 DMC Standard A-69 DMC Standard A-300 Turbine
Flow Rate by Volume (Transfer Standard) (Secondary Air Flow)	10 ACFM to 120 ACFM 20 CFM to 14000 CFM	0.38 % 0.50 %	DMC Standard A-297 DMC Standard A-197
Mass Velometer	50 ACFM to 8000 ACFM	0.20 %	DMC Standard A-220 (12 in Wind Tunnel)
Vane Anemometer	50 FPM to 8000 FPM	0.69 %	DMC Standard A-69 (12 in Wind Tunnel)
Pressure	0 inH_2O to 2 inH_2O Vacuum to 1000 mmHg -15 psia to 595 psig -595 psig to -15 psia 10 psig to 10000 psig 0.01 inH_2O to 10 inH_2O	0.002 inH_2O 0.05 mmHg 0.011 % 0.011 % 0.12 % 0.13 %	DMC Standard A135 DMC Standard A22 DMC Standard A321 DMC Standard A321 DMC Standard A475 DMC Standard A484
Density (in terms of specific gravity)	0.7 SG to 1.95 SG	0.0002 %	DMC Standard A219
Density by Volumetric Means	99.9304 mL	0.00010 %	DMC Standard A799
Density by Gravimetric Means	0 g to 200 g	0.00020 g	DMC Standard A150

SCOPE OF ACCREDITATION

CALIBRATION AREA	RANGE	EXPANDED UNCERTAINTY[3] (±)	TECHNIQUE, REFERENCE STANDARD, EQUIPMENT
Volume by Gravimetric Means	0.1 gal to 5 gal 5 gal to 50 gal 50 gal to 100 gal 100 gal to 200 gal 200 gal to 1000 gal	0.00088 gal 0.012 gal 0.022 gal 0.056 gal 0.12 gal	DMC 5GAL.01 DMC STD. A264
Gas Detection	0.0001 mL to 0.1 L Specific Gas Mixtures up to 12 L	0.19 % 2 %	DMC Standard A1 DMC Standard A3 and Gas Mixtures from Calibration Gas Bottles of 0 L to 39 L
Torque	4 in-lb to 250 ft-lb	0.25 %	Laboratory developed procedure
Thermal			
Temperature	60 °F to 90 °F -180 °C to 1150 °C	0.019 °F 0.14 °C	DMC Standard A24 DMC Standard A312
Relative Humidity	10 %RH to 95 %RH	1.2 %	Custom Wet/Dry Bulb Chamber – Procedure based on NAVAIR-17-20MH-32

[1]The uncertainty covered by the Calibration and Measurement Uncertainty (CMC) is expressed as the expanded uncertainty having a specific coverage probability of approximately 95 %. It is the smallest measurement uncertainty that a laboratory can achieve within its scope of accreditation when performing more or less routine calibrations of nearly ideal measurement standards or nearly ideal measuring equipment. The actual measurement uncertainty of a specific calibration performed by the laboratory may be greater than that provided in the CMC due to the behavior of the customer's device and to influences from the circumstances of the specific calibration.

[2]If information in this CMC is presented in non-SI units, the conversion factors stated in NIST Special Publication 811 "Guide for the Use of the International System of Units (SI)" apply.

[3]When uncertainty is stated in relative terms (such as percent, a multiplier expressed as a decimal fraction or in scientific notation), it is in relation to instrument reading or instrument output, as appropriate, unless otherwise indicated.

FS = full scale
gal = gallon (US)
ALPM = actual liter per minute
ACFM = actual cubic foot per minute
SCFM = standard cubic foot per minute
SCCM = standard cubic centimeter per minute
SG = specific gravity