SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017

GLOBAL MOZON SUPPORT SERVICES EST.
Yanbu 5456 – Al Mashhad Unit No.2
Yanbu, Saudi Arabia 46423-7439
Mr. Khalaif Al-Mozaini Phone: 96614 354 1405

CALIBRATION

Valid To: August 31, 2023 Certificate Number: 4218.01

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory to perform the following calibrations[1, 7]:

I. Acoustics

Parameter/Equipment	Range	CMC[2] (±)	Comments
Sound Level Meters	94 dB 114 dB	1.0 dB 1.4 dB	In-house method GMCL-TP41

II. Chemical

Parameter/Equipment	Range	CMC[2, 5] (±)	Comments
Gas Detectors – H_2S CO Methane (50 %) LEL O_2	 0.0025 % 0.01 % 2.5 % (50 % LEL) 18 %	 8 %	 Standard gasses, in-house method GMCL-TP42; LEL = Lower explosive limit

5202 Presidents Court, Suite 220 | Frederick, MD 21703-8515 | Phone: 301 644 3248 | Fax: 240 454 9449 | www.A2LA.org

III. Dimensional

Parameter/Equipment	Range	CMC[2, 4] (±)	Comments
Calipers	Up to 300 mm Up to 500 mm	24 µm 35 µm	Mahr 7650, Mahr 355 E, VDI/VDE/DGQ 2618, and in-house method GMCL-TP08
Micrometers	Up to 25 mm	2.5 µm	Mahr 10292, VDI/VDE/DGQ 2618, and in-house method GMCL-TP09
Dial Indicators	Up to 25 mm	6 µm	Mahr 10292, VDI/VDE/DGQ 2618, and in-house method GMCL-TP10
Measuring Tapes	Up to 1 m (>1 to 50) m	0.5 mm 0.52 mm/m	Measuring tape, in-house method GMCL-TP38
Measuring Tapes and Rules	Up to 1 m (>1 to 10) m	0.3 mm 0.32 mm/m	Gage blocks, in-house method GMCL-TP-38
Laser Distance Meters	Up to 1 m (>1 to 10) m	0.5 mm 0.52 mm/m	Measuring tape, in-house method GMCL-TP38
Ultrasonic/Coating Thickness Gauges	25 µm to 15mm	4 µm + 0.6R	In-house method GMCL-46
Test Foils (Shims)	5 µm to 15mm	3.2 µm	In-house method GMCL-49

IV. Electrical – DC Low Voltage/Frequency

Parameter/Equipment	Range	CMC[2, 6] (±)	Comments
DC Voltage – Measure	Up to 10 mV (10 to 100) mV (0.1 to 1) V (1 to 10) V (10 to 100) V (100 to 1000) V (1 to 10) kV	4.7 µV 7.1 µV 32 µV 300 µV 4.4 mV 48 mV 5.4 V	Time Electronics 5075, in-house method GMCL-TP25
DC Voltage – Generate	Up to 20 mV (20 to 200) mV (0.2 to 2) V (2 to 20) V (20 to 200) V (200 to 1000) V	6.4 µV 9.4 µV 54 µV 440 µV 10 mV 84 mV	Time Electronics 5025C, Euramet cg-15 and in-house method GMCL-TP11
DC Current – Measure	Up to 10 µA (10 to 100) µA (0.1 to 1) mA (1 to 10) mA (10 to 100) mA (0.1 to 1) A (1 to 10) A (10 to 30) A	13 nA 23 nA 160 nA 1.6 µA 16 µA 0.32 mA 10 mA 19 mA	Time Electronics 5075, in-house method GMCL-TP26
DC Current – Generate	Up to 200 µA (0.2 to 2) mA (2 to 20) mA (20 to 200) mA (0.2 to 2) A (2 to 22) A	36 nA 190 nA 1.7 µA 20 µA 0.35 mA 7.4 mA	Time Electronics 5025C, Euramet cg-15 and In-House Method GMCL-TP12
Clamp-on Meters	(10 to 100) A (100 to 1100) A	0.65 A 6.6 A	Time Electronics 5025C and Time Electronics 9780, in-house method GMCL-TP16
Welding Machines[3] –			
Current	(10 to 100) A (100 to 1100) A	0.9 A 7.5 A	DMM, digital clamp meter, in-house method GMCL-TP33
Voltage	(1 to 10) V (10 to 100) V (100 to 1000) V	0.04 V 0.4 V 4 V	

Parameter/Equipment	Range	CMC[2, 5, 6] (±)	Comments
Resistance – Generate	(1 to 20) Ω (20 to 100) Ω (100 to 1000) Ω (1 to 10) kΩ (10 to 100) kΩ (100 to 1000) kΩ (1 to 10) MΩ (10 to 120) MΩ 1 GΩ	12 mΩ 21 mΩ 120 mΩ 2.4 Ω 13 Ω 130 Ω 2.5 kΩ 140 kΩ 110 MΩ	Time Electronics 5025C, Euramet cg-15, and in-house method GMCL-TP13
Resistance – Measure	Up to 100 mΩ (0.1 to 1) Ω (1 to 10) Ω (10 to 100) Ω (100 to 1000) Ω (1 to 10) kΩ (10 to 100) kΩ (100 to 1000) kΩ (1 to 10) MΩ (10 to 100) MΩ (100 to 1000) MΩ	0.02 mΩ 0.09 mΩ 0.68 mΩ 4.7 mΩ 47 mΩ 0.47 Ω 6.4 Ω 120 Ω 2 kΩ 130 kΩ 10 MΩ	Time Electronics 5075, in-house method GMCL-TP27
Earth Resistance – Measuring Instruments	(1 to 10) mΩ (10 to 100) mΩ (0.1 to 1) Ω (1 to 10) Ω (10 to 100) Ω (100 to 1000) Ω (1 to 10) kΩ (10 to 100) kΩ	0.2 mΩ 0.2 mΩ 0.2 mΩ 0.44 mΩ 3.5 mΩ 35 mΩ 0.35 Ω 3.5 Ω	IET labs HARS-X-8-0.001, Euramet cg-15, and in-house method GMCL-TP21
Insulation Resistance – Measuring Instruments	(10 to 100) kΩ (100 to 1000) kΩ (1 to 10) MΩ (10 to 100) MΩ (100 to 1000) MΩ (1 to 10) GΩ (10 to 100) GΩ (100 to 1000) GΩ	0.24 % 0.13 % 0.13 % 0.13 % 0.25 % 1.2 % 2.4 % 7 %	Time Electronics 5090, in-house method GMCL-TP22
Electrical Test Benches [3]	(5 to 1000) V (0.1 to 40) A (>40 to 100) A 100 W to 20 kW	0.4 % 0.4 % 1 % 0.6 %	In-house method GMCL-TP49

Parameter/Frequency	Range	CMC[2, 6] (±)	Comments
AC Voltage – Measure			
45 Hz to 1 kHz	(3 to 30) mV (30 to 300) mV (0.3 to 3) V (3 to 30) V (30 to 300) V (300 to 3000) V	88 µV 310 µV 2.6 mV 26 mV 0.84 V 8.4 V	Time Electronics 5075, in-house method GMCL-TP28
AC Voltage – Generate			
45 Hz to 1 kHz	(1 to 20) mV (20 to 200) mV (0.2 to 2) V (2 to 20) V (20 to 200) V (200 to 1000) V	48 µV 110 µV 0.56 mV 8.4 mV 86 mV 1 mV	Time Electronics 5025C, Euramet cg-15 and in-house method GMCL-TP14
AC Current – Generate			
45 Hz to 1 kHz	10 to 200) µA (0.2 to 2) mA (2 to 20) mA (20 to 200) mA (0.2 to 2) A (2 to 22) A	0.35 µA 1.7 µA 16 µA 160 µA 2.6 mA 26 mA	Time Electronics 5025C, Euramet cg-15, and in-house method GMCL-TP15
Clamp-on meters (45 to 65) Hz	(10 to 100) A (100 to 1100) A	0.82 A 7.4 A	Time Electronics 5025C and Time Electronics 9780, in-house method GMCL-TP17
AC Current – Measure			
45 Hz to 1 kHz	(30 to 300) µA (0.3 to 3) mA (3 to 30) mA (30 to 300) mA (0.3 to 3) A (3 to 30) A	0.94 µA 8.8 µA 88 µA 0.87 µA 8.7 mA 87 mA	Time Electronics 5075, in-house method GMCL-TP29
DC/AC Hi Pot Testers	(1 to 40) kV DC (1 to 28) kV AC	0.7 % + 0.008 kV 1.6 % + 0.008 kV	In-house method GMCL-TP48

Parameter/Equipment	Range	CMC[2, 5, 6] (±)	Comments
Power – Generate			
DC	(2 to 400) W 400 W to 20 kW	0.08 % 0.09 %	Time Electronics 5025C, Euramet cg-15 and in-house method GMCL-TP19
AC (50 to 60 Hz)	(2 to 400) W 400 W to 20 kW	0.27 % 0.17 %	
Electrical Simulation of RTD[3] –			
Pt-100	(-180 to 200) °C (200 to 500) °C (500 to 850) °C	0.24 °C 0.34 °C 0.46 °C	Time Electronics 5025C, Euramet cg-11, and in-house method GMCL-TP20
RTD[3] Simulation Devices	(-180 to 200) °C (200 to 500) °C (500 to 850) °C	0.24 °C 0.34 °C 0.46 °C	Time Electronics 5025C, Euramet cg-11 and in-house method GMCL-TP20
Electrical Simulation of Thermocouples[3] –			
TC (Type J)	(-210 to -50) °C (-50 to 1200) °C	0.30 °C 0.20 °C	Time Electronics 5025C, Euramet cg-11, and in-house method GMCL-TP20
TC (Type K)	(-200 to -100) °C (-100 to 480) °C (480 to 1372) °C	0.34 °C 0.22 °C 0.26 °C	
TC (Type T)	(-200 to -100) °C (-100 to 400) °C	0.34 °C 0.21 °C	
TC (Type R)	(-50 to 20) °C (20 to 250) °C (250 to 1768) °C	1.6 °C 0.96 °C 0.78 °C	
TC (Type S)	(-50 to 100) °C (100 to 500) °C (500 to 1768) °C	1.4 °C 0.8 °C 0.74 °C	
TC (Type B)	(300 to 600) °C (600 to 1820) °C	1.7 °C 1.5 °C	

Parameter/Equipment	Range	CMC[2] (±)	Comments
Thermocouple Simulation Devices[3] –			
TC (Type J, K, T)	(-200 to 1370) °C	0.32 °C	Time Electronics 5075, Euramet cg-11and in-house method GMCL-TP20
TC (Type R, S, B)	(-50 to 1768) °C	2 °C	

V. Fluid Quantities

Parameter/Equipment	Range	CMC[2, 5] (±)	Comments
Pipettes and Volumetric Flasks	(10 to 50) µL (50 to 100) µL (100 to 200) µL (200 to 500) µL (500 to 1000) µL 1000 µL to 1 mL (10 to 100) mL (100 to 200) mL	0.4 % + 0.015 µL 0.2 % + 0.019 µL 0.2 % + 0.025 µL 0.2 % + 0.028 µL 0.2 % + 0.035 µL 0.2 % + 0.064 µL 0.2 % + 0.17 µL 0.2 % + 0.36 µL	Calibration procedures: ISO 8655 and in-house Method GMCL-TP31

VI. Mechanical

Parameter/Equipment	Range	CMC[2, 4] (±)	Comments
Balance[3]	≤ 50 mg ≤ 100 mg ≤ 200 mg ≤ 500 mg ≤ 1000 mg ≤ 10 g ≤ 100 g ≤ 220 g 220 g to 1 kg (1 to 5) kg (5 to 10) kg (10 to 100) kg (100 to 550) kg	0.014 mg + 0.6 *R* 0.018 mg + 0.6 *R* 0.024 mg + 0.6 *R* 0.028 mg + 0.6 *R* 0.034 mg + 0.6 *R* 0.064 mg + 0.6 *R* 0.17 mg + 0.6 *R* 0.36 mg + 0.6 *R* 1.8 mg + 0.6 *R* 9.8 mg + 0.6 *R* 37 mg + 0.6 *R* 3.4 g + 0.6 *R* 20 g + 0.6 *R*	Hafner class E2, Hafner class M1, Euramet cg-18, and in-house method GMCL-TP01

Parameter/Equipment	Range	CMC[2, 4, 5, 6] (±)	Comments
Batching Plant	(100 to 500) kg (>500 to 1000) kg (>1000 to 2000) kg	20 g + 0.6*R* 40 g + 0.6*R* 80 g + 0.6*R*	In-house method GMCL-TP51
Pressure – Measuring Equipment[3]			
Pneumatic	(-1 to 1) bar	$150 \cdot 10^{-6} \cdot P$ + 0.0058 mbar + 0.6*R*	Budenberg BGP1, Budenberg, Druck DPI 612 BGH1400, and in-house method GMCL-TP30
Hydraulic	(-1 to 0) bar (> 0 to 20) bar (20 to 100) bar	0.13 %·*P* + 0.0058 mbar+ 0.6*R* 0.042 %·*P* +0.058 mbar+ 0.6*R* 0.026 %·*P* +0.58 mbar+0.6*R*	
	(2 to 70) bar (70 to 700) bar (700 to 1400) bar	$150 \cdot 10^{-6} \cdot P$ + 0.058 mbar + 0.6*R* $150 \cdot 10^{-6} \cdot P$ + 0.58 mbar + 0.6*R* $150 \cdot 10^{-6} \cdot P$ + 5.8 mbar + 0.6*R*	
Pressure Gauges & Transmitters[3]	(-1 to 40) bar (70 to 700) bar	0.3 % ·*P* + 0.58 mbar + 0.6*R*	In-house method GMCL-TP39
Relief Valves [3]	(0 to 70) bar (70 to 700) bar	0.034 bar 0.5 bar	Pressure gauge, in-house method GMCL-TP40
Centrifuges[3] (RPM)	(25 to 100) rpm (>100 to <1000) rpm (1000 to <10 000) rpm (10 000 to <100 000) rpm	0.09 rpm 0.065 rpm 0.058 % + 0.65 rpm 0.058 % + 6.5 rpm	Tachometer, in-house method GMCL-TP37
Phototachometers	(6 to 1000) rpm (1000 to 10 000) rpm (10 000 to 600 000) rpm	0.12 rpm 1.2 rpm $200 \cdot 10^{-6} \cdot I$	Time Electronics 5025C and Time Electronics Tacho adapter s/n 9773, in-house method GMCL-TP18 *I* is the indication of the tachometer

Parameter/Equipment	Range	CMC[2, 5, 6] (±)	Comments
Torque Wrenches and Torque Measuring Instruments –	(6.78 to 67.8) N.m (67.8 to 678) N.m (678 to 1000) N.m	0.66 % 0.86 % 0.5 %	Time Electronics TTS-100, Mountz BMX 50F, Mountz BMX 500F, Mountz BMX 1000F, ISO 6789:2017, in-house method GMCL-TP32
Uniaxial Testing Machines, CBR, Marshall, Point Load, Flexural[3] –			
Tension	1 to 10 kN	0.06 %	GTM LT-Digitizer 2 channel, GTM KTN-ZD-10KN Matest C142-04, Matest C142-01, ISO 7500-1, in-house method GMCL-TP35
Compression	1 to 10 kN (10 to 100) kN (100 to 200) kN (200 to 300) kN (300 to 500) kN (500 to 1000) kN	0.08 % 0.4 % 0.66 % 0.48 % 0.4 % 0.32 %	

VII. Thermodynamics

Parameter/Equipment	Range	CMC[2, 6] (±)	Comments
Temperature – Measuring Equipment[3]			
RTD	(-80 to 125) °C (50 to 650) °C	0.082 °C 0.19 °C	Isotech MilliK and Isotech 935-14-95H, Ametek PTC-125 and Ametek CTC-650A, DKD-R-5-1, and in-house method GMCL-TP02

Parameter/Equipment	Range	CMC[2, 6] (±)	Comments
Temperature – Measuring Equipment[3] Thermocouples	(-80 to 125) °C (50 to 650) °C (650 to 850) °C (850 to 1100) °C	0.25 °C 0.4 °C 2.1 °C 4 °C	Isotech MilliK, Isotech 935-14-95H and Isotech 935-14-91, Ametek PTC-125, Ametek CTC-650A and Ametek CTC-1200A, Euramet cg-08, and in-house method GMCL-TP03
Temperature – Generating Equipment[3] Dry Heat Sources, Furnaces, Stirred Liquid Baths	(-80 to 125) °C (125 to 250) °C (250 to 850) °C (850 to 1100) °C	0.42 °C 0.64 °C 3.2 °C 6 °C	Isotech MilliK, Isotech 935-14-95H, Isotech type (N) sensor, Fluke 52 II and Fluke TC (type K) sensor, Euramet cg-13, and in-house method GMCL-TP05 and GMCL-TP07
Humidity – Measuring Equipment	(10 to 95) % RH	1.5 % RH	Vaisala MI70 / HMP77, Euramet cg-13, and in-house method GMCL-TP07
Temperature and Humidity – Measuring Instruments[3]	(10 to 95) % RH (-40 to 0) °C (0 to 100) °C @ 50 % RH	1.5 % RH 2.4 °C 0.5 °C	Vaisala MI70 / HMP77, Isotech 935-14-95H, Kambic Metrology KK-50 CHLT, DKD-R 5-7, and in-house method GMCL-TP06

VIII. Time & Frequency

Parameter/Equipment	Range	CMC[2, 4] (±)	Comments
Timers	(0 to 600) s (10 to 60) min (1 to 10) hrs (10 to 24) hrs	0.01 s 0.064 s 0.62 s 1.5 s	Tektronix FCA3103, In-house Method GMCL-TP36
Stopwatches and Chronographs	Up to 1 hr Up to 24 hrs	0.34 s 1.6 s	Tektronix FCA3103, In-house Method GMCL-TP36
Function Generators (Frequency Only)	10 Hz to 10 kHz 10 kHz to 300 MHz 300 MHz to 3 GHz	12 µHz/Hz 22 µHz/Hz 65 µHz/Hz	Tektronix FCA3103, In-house Method GMCL-TP23

[1] This laboratory offers commercial calibration service and field calibration service.

[2] Calibration and Measurement Capability Uncertainty (CMC) is the smallest uncertainty of measurement 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. CMC's represent expanded uncertainties expressed at approximately the 95 % level of confidence, usually using a coverage factor of $k = 2$. The actual measurement uncertainty of a specific calibration performed by the laboratory may be greater than the CMC due to the behavior of the customer's device and to influences from the circumstances of the specific calibration.

[3] Field calibration service is available for this calibration. Please note the actual measurement uncertainties achievable on a customer's site can normally be expected to be larger than the Calibration and Measurement Capability Uncertainty (CMC) found on the A2LA Scope. Allowance must be made for aspects such as the environment at the place of calibration and for other possible adverse effects such as those caused by transportation of the calibration equipment. The usual allowance for the uncertainty introduced by the item being calibrated, (e.g. resolution) must also be considered and this, on its own, could result in the actual measurement uncertainty achievable on a customer's site being larger than the CMC.

[4] In the statement of CMC, R is the resolution of the unit under test. In the statement of CMC, P is the pressure in bar.

[5] In the statement of CMC, the value is defined as the percentage of reading, unless otherwise noted.

[6] The type of instrument or material being calibrated is defined by the parameter. This indicates the laboratory is capable of calibrating instruments that measure or generate the values in the ranges indicated for the listed measurement parameter.

[7] This scope meets A2LA's *P112 Flexible Scope Policy.*

Accredited Laboratory

A2LA has accredited

GLOBAL MOZON LABORATORY FOR CALIBRATION AND SUPPORTING SERVICES

Yanbu, KINGDOM OF SAUDI ARABIA

for technical competence in the field of

Calibration

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017 *General requirements for the competence of testing and calibration laboratories*. This laboratory also meets R205 – Specific Requirements: Calibration Laboratory Accreditation Program. 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*).

Presented this 2nd day of September 2021.

Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 4218.01
Valid to August 31, 2023

For the calibrations to which this accreditation applies, please refer to the laboratory's Calibration Scope of Accreditation.