



INTERNATIONAL
ACCREDITATION
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CERTIFICATE OF ACCREDITATION

This is to attest

GRAY MACKENZIE ENGINEERING SERVICES WLL

AHLI BANK BUILDING (1ST FLOOR), AL-KHOR CITY, PO BOX 55918
DOHA, QATAR

Calibration Laboratory CL-308

has met the requirements of AC204, *IAS Accreditation Criteria for Calibration Laboratories*, and has demonstrated compliance with ISO/IEC Standard 17025:2017, *General requirements for the competence of testing and calibration laboratories*. This organization is accredited to provide the services specified in the scope of accreditation.

Expiration Date May 1, 2027

Effective Date April 27, 2025



International Accreditation Service

Issued under the authority of IAS management

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SCOPE OF ACCREDITATION

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GRAY MACKENZIE ENGINEERING SERVICES WLL

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Accredited to ISO/IEC 17025:2017

Effective Date April 27, 2025

CALIBRATION AND MEASUREMENT CAPABILITY (CMC)*

MEASURED QUANTITY or DEVICE TYPE CALIBRATED	RANGE	UNCERTAINTY ^{1,2} (±)	CALIBRATION METHOD OR PROCEDURE, STANDARD EQUIPMENT (OPTIONAL)
Dimensional			
Vernier Caliper	0 mm to 300 mm	6.4 µm	Grade 0 Gauge blocks BS EN ISO 13385-1:2019
Micrometer	0 mm to 25 mm	5.8 µm	Grade 0 Gauge blocks BS EN ISO 3611:2023
Thickness gauge	0 mm to 100 mm	5.9 µm	Grade 0 Gauge blocks IS 3179:2024
Dial Indicator	0 mm to 50 mm	5.9 µm	Grade 0 Gauge blocks ISO 463:2006
Depth Gauges	0 mm to 300 mm	5.9 µm	Grade 0 Gauge blocks ISO 13385-2:2020
Coating Thickness gauge	1600 µm	1.5 µm	Thickness foils IS 12434:2013
Mechanical			
Pressure Gauges Transducer - Hydraulic	0 bar to 1100 bar	0.065 bar	Dead weight tester DKD R 6-1:2014
Pressure Recorder - Hydraulic	0 bar to 1100 bar	0.61 bar	Dead weight tester DKD R 6-1:2014
Pressure Transmitter - Hydraulic	0 bar to 4000 bar	0.1 bar	Test bench with Calibrated Master pressure gauge DKD R 6-1:2014
Pressure & vacuum Gauges/ recorders/ transmitter/	-1 bar to 0 bar 0 bar to 20 Bar 0 bar to 100 bar	0.07 bar 0.07 bar 0.09 bar	Pressure calibrator DKD R 6-2:2014

* 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.

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MEASURED QUANTITY or DEVICE TYPE CALIBRATED	RANGE	UNCERTAINTY ^{1,2} (±)	CALIBRATION METHOD OR PROCEDURE, STANDARD EQUIPMENT (OPTIONAL)
transducer/ relief valve ⁵ Pneumatic			
Pressure Relief Valves	0 bar to 400 bar	0.7 bar	Test bench with Calibrated Master pressure gauge API 526, API 527
Mass - Balances and Scales ⁷	0 g to 220 g 0 kg to 3500 g 0 kg to 10000g 1 kg to 100 kg	0.40 mg 0.02 g 1.5 g 0.11 kg	E2 Weight sets F1 weights set OIML R 76-1:2006 OIML R 76-2:2006
Standard weights	1 mg 2 mg 5 mg 10 mg 20 mg 50 mg 100 mg 200 mg 500 mg 1 g 2 g 5 g 10 g 20 g 50 g 100 g 200 g	0.01 mg 0.01 mg 0.01 mg 0.01 mg 0.01 mg 0.01 mg 0.01 mg 0.01 mg 0.01 mg 0.02 mg 0.02 mg 0.02 mg 0.02 mg 0.03 mg 0.03 mg 0.05 mg 0.16 mg	Digital precision balance (220 g, 0.01 mg) OIML R 111-1:2004 OIML R 111-2:2004
	500 g 1 kg 2 kg 3 kg 3500 g	0.01 g 0.01 g 0.01 g 0.01 g 0.011 g	Precision Balance 3500 g, 0.01 g OIML R 111-1:2004 OIML R 111-2:2004
	5 kg 10 kg 20 kg	0.1 g 0.1 g 50 g	Weighing Balance 10 kg, 0.1 g Weighing balance 100 kg, 0.05 kg OIML R 111-1:2004 OIML R 111-2:2004
Flow Meter/ transmitter ⁵	0 m ³ /hr to 720 m ³ /hr	2.2 %	Ultrasonic flow transmitter by comparison method ISO 12242:2012
Torque Torque Wrenches	30 N·m to 150 N·m 150 N·m to 1500 N·m	0.28 N m 1.8 N m	Torque sensors ISO 6789:2017 Parts 1 and 2

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Volume	1 µL to 220 mL	0.4 µL	Digital precision balance (220 g, 0.00001 mg)
	220 mL to 1000 mL	0.6 µL	Digital precision balance (3500g, 0.01g) Gravimetric method
Sound Level Meter ⁵	94 dB & 114 dB (1 kHz)	1.4 dB	Acoustic calibrator OIML R-58:2007
Air velocity meter ⁵	1 m/s to 15 m/s	0.5 m/s	Wind tunnel, Master anemometer by comparison method ASTM D5096-02:2017
Light meter ⁵	50 Lux to 12000 Lux	5.5 %	Master lux meter with source By comparison method
Thermal			
RTD / Temp. Indicator with ⁵ sensor / Recorder/ Temperature Gauges Thermocouple with Sensor/Transmitter	-80 °C to 600 °C	0.43 °C	Temperature Sensor with Indicator and Temperature calibrator DKD R 5-1:2023 Euramet CG-08:2020
	600 °C to 1100 °C	2.7 °C	
Infrared Thermometer / Pyrometer	50 °C to 300 °C 300 °C to 500 °C	2.2 °C 3.7 °C	Using Infrared thermometer and Black body Source by comparison method ASTM E8427-21
Humidity (Hygrometer/ Humidity Meter)	30 %RH to 90 %RH 20 °C to 50 °C	1.6 %RH 0.65 °C	Humidity Chamber DKD R 5-8:2019
Furnaces, Ovens, Incubators, Stirred Water baths, Fridges and Freezers ⁵ (Single Point)	-80 °C to 650 °C	0.43 °C	PT 100 with read out DKD R 5-7:2004 Euramet CG-20:2017
Electrical – DC/LF			
DC Voltage – Generate ^{3,5}	0 mV to 330 mV	0.009 mV	5522A – Multi product calibrator Euramet CG-15:2015
	330 mV to 3.3 V	0.00008 V	
	3.3 V to 33 V	0.0009 V	
	33 V to 330 V	0.009 V	
	330 V to 1000 V	0.03 V	
DC Voltage – Measure ^{4,5}	0 mV to 100 mV	0.00037 mV	8508A – 8½ Precision multimeter Direct Method
	100 mV to 1 V	0.000003 V	
	1 V to 10 V	0.00003 V	
	10 V to 100 V	0.00041 V	
	100 V to 1000 V	0.0057 V	



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MEASURED QUANTITY or DEVICE TYPE CALIBRATED	RANGE	UNCERTAINTY ^{1,2} (±)	CALIBRATION METHOD OR PROCEDURE, STANDARD EQUIPMENT (OPTIONAL)
AC Voltage – Generate ^{3,5}	(20 Hz to 1 kHz) 1 mV to 33 mV 33 mV to 330 mV (20 Hz to 50 Hz) 330 mV to 3.3 V (50 Hz to 1 kHz) 330 mV to 3.3 V 3.3 V to 33 V (1 kHz to 100 kHz) 3.3 V to 33 V (50 Hz to 10 kHz) 33 V to 330 V 330 V to 1000 V	0.54 mV 0.13 mV 0.0037 V 0.0013 V 0.01 V 0.061 V 0.14 V 0.39 V	5522A – Multi product calibrator Euramet CG-15:2015
AC Voltage – Measure ^{4,5}	100 mV to 1 V (10 Hz to 40 Hz) (40 Hz to 1 kHz) (1 kHz to 30 kHz) 1 V to 10 V (10 Hz to 40 Hz) (40 Hz to 1 kHz) (1 kHz to 30 kHz) 10 V to 100 V (40 Hz to 1 kHz) (1 kHz to 30 kHz) 100 V to 1000 V (40 Hz to 1 kHz) (1 kHz to 10 kHz)	0.0003 V 0.00008 V 0.0002 V 0.0028 V 0.0009 V 0.002 V 0.009 V 0.025 V 0.11 V 0.087 V	8508A – 8½ Precision multimeter Direct method
DC Current – Generate ^{3,5}	0 µA to 330 µA 0.33 mA to 3.3 mA 3.3 mA to 33 mA 33 mA to 330 mA 330 mA to 3 A 3 A to 20 A	0.08 µA 0.0006 mA 0.006 mA 0.041 mA 0.0014 A 0.013 A	5522A – Multi product calibrator Euramet CG-15:2015
DC Current – Measure ^{4,5}	0 µA to 100 µA 0.1 mA to 1 mA 1 mA to 10 mA 10 mA to 100 mA 100 mA to 3 A 3 A to 10 A	0.001 µA 0.01 µA 0.00011 mA 0.0034 mA 0.0012 A 0.0034 A	8508A – 8½ Precision multimeter Direct Method



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AC Current – Generate ^{3,5}	(50 Hz to 1 kHz) 30 µA to 330 µA 0.330 mA to 3.3 mA 3.3 mA to 33 mA 33 mA to 330 mA 0.33 A to 1 A (50 Hz) (1kHz) (10 kHz) 1 A to 3 A (50 Hz to 1 kHz) (1kHz to 5 kHz) 3 A to 11 A (50 Hz to 1 kHz) 11 A to 20 A (50 Hz to 1 kHz)	0.84 µA 0.0047 mA 0.04 mA 0.2 mA 0.0008 A 0.0035 A 0.035 A 0.0059 A 0.11 A 0.025 A 0.042 A	5522A – Multi product calibrator Euramet CG-15:2015
AC Current – Measure ^{4,5}	(40 Hz to 1 kHz) 10 mA to 100 mA 100 mA to 1 A 1 A to 3 A 3 A to 10 A	0.036 mA 0.0007 A 0.004 A 0.008 A	8508A – 8½ Precision multimeter Direct Method
Resistance – Generate ^{3,5}	0 Ω to 11 Ω 11 Ω to 33 Ω 33 Ω to 110 Ω 110 Ω to 330 Ω 0.33 kΩ to 1 kΩ 1 kΩ to 11 kΩ 11 kΩ to 110 kΩ 0.110 MΩ to 1 MΩ 1 MΩ to 11 MΩ 11 MΩ to 110 MΩ 110 MΩ to 330 MΩ 330 MΩ to 1100 MΩ	0.0016 Ω 0.0027 Ω 0.006 Ω 0.014 Ω 0.00005 kΩ 0.0005 kΩ 0.0054 kΩ 0.0001 MΩ 0.0023 MΩ 0.11 MΩ 1.2 MΩ 21 MΩ	5522A – Multi product calibrator Euramet CG-15:2015
Resistance – Measure ^{4,5}	0 Ω to 100 Ω 100 Ω to 1 kΩ 1 kΩ to 10 kΩ 10 kΩ to 100 kΩ 0.1 MΩ to 1 MΩ 1 MΩ to 10 MΩ 10 MΩ to 100 MΩ 0.001 GΩ to 1 GΩ	0.0007 Ω 0.000008 kΩ 0.00007 kΩ 0.0001 kΩ 0.000009 MΩ 0.00018 MΩ 0.012 MΩ 0.0013 GΩ	8508A – 8½ Precision multimeter Direct Method



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Capacitance – Generate ^{3,5} @ 1 kHz	220 pF to 1 nF 1 nF to 700 nF 1 uF to 30 uF	0.58 nF 0.91 nF 0.19 uF	5522A – Multi product calibrator By direct method
Temperature Simulation ⁵ (Generate) RTD Pt 385,100 Ω	-200 °C to 800 °C	0.17 °C	5522A – Multi product calibrator Euramet CG-11:2011
Thermocouple (Simulation) ⁵ Type B Type E Type J Type K Type N Type R Type S Type T	600 °C to 1800 °C -250 °C to 1000 °C -210 °C to 1200 °C -200 °C to 1372 °C -200 °C to 1300 °C 0 °C to 1767 °C 0 °C to 1767 °C -250 °C to 400 °C	0.8 °C 0.59 °C 0.32 °C 0.47 °C 0.47 °C 0.67 °C 0.56 °C 0.73 °C	
Thermocouple ⁵ Simulation (Measurement) Type B Type E Type J Type K Type N Type R Type S Type T	600 °C to 1800 °C -250 °C to 1000 °C -210 °C to 1200 °C -200 °C to 1372 °C -200 °C to 1300 °C 0 °C to 1767 °C 0 °C to 1767 °C -250 °C to 400 °C	0.8 °C 0.59 °C 0.32 °C 0.47 °C 0.47 °C 0.67 °C 0.56 °C 0.73 °C	5522A – Multi product calibrator Euramet CG-11:2011
Time and Frequency			
Rotational speed – Contact ⁵	9000 rpm	6.8 rpm	Reference tachometer
Rotational speed – non- contact ⁵	90000 rpm	12 rpm	SANAS TR 45-03:2023
Frequency Generate ⁵	1 Hz to 10 Hz 10 Hz to 120 Hz 0.120 kHz to 1 kHz 1 kHz to 100 kHz	0.006 Hz 0.06 Hz 0.002 kHz 0.006 kHz	5522A – Multi product calibrator By direct Method
Chemical			
Gas Detector Calibration	CO – 100 ppm O2 – 18.0 % H2S – 25 ppm LEL – 50%	0.67 part per 10 ⁶ 2 % 0.21 part per 10 ⁶ 2.1 %	Span Gas cylinder by direct method

¹The uncertainty covered by the Calibration and Measurement Capability (CMC) is expressed as the expanded uncertainty having a coverage probability of approximately 95 %. It is the smallest measurement uncertainty that a laboratory can achieve within its scope of accreditation when performing calibrations of a best existing device. The



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measurement uncertainty reported on a calibration certificate may be greater than that provided in the CMC due to the behavior of the calibration item and other factors that may contribute to the uncertainty of a specific calibration.

²When 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.

³Capability is suitable for the calibration of measuring devices in the stated ranges.

⁴Capability is suitable for the calibration of devices intended to generate the indicated quantity in the stated ranges.

⁵Also available as site calibration. Note that actual measurement uncertainties achievable at a customer's site can normally be expected to be larger than the uncertainties listed on this Scope of Accreditation.

⁶Stated uncertainties are valid for the ranges of frequencies given, but the actual frequency applied by the calibrator may be dependent on the measurement device under calibration.

⁷Only for site calibration

Notes

ppm= parts per million

