CERTIFICATE OF ACCREDITATION

This is to attest that

SAUDI ARABIAN ENGINEERING CO. LTD. (SAECO)

SECOND INDUSTRIAL CITY
DAMMAM, 31952, SAUDI ARABIA

Calibration Laboratory CL-187

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.

Effective Date November 14, 2024

Expiration Date August 1, 2026

President

Visit www.iasonline.org for current accreditation information.

SCOPE OF ACCREDITATION

International Accreditation Service, Inc.

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SAUDI ARABIAN ENGINEERING CO. LTD. (SAECO)

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Accredited to ISO/IEC 17025:2017 *Effective Date November 14, 2024*

CALIBRATION AND MEASUREMENT CAPABILITY (CMC)*

MEASURED QUANTITY or DEVICE TYPE CALIBRATED	RANGE	UNCERTAINTY[1,2] (±)	CALIBRATION METHOD OR PROCEDURE, STANDARD EQUIPMENT (OPTIONAL)
Dimensional			
Caliper	0 mm to 300 mm	6.0 µm	Using Gauge Blocks Set as per ISO 13385-1
Micrometer- Outside	0 mm to 300 mm	6.0 µm	Using Gauge Blocks Set as per ISO 3611
Dial Gauge	0 mm to 150 mm	6.0 µm	Using Gauge Blocks Set as per ISO 9493
Mechanical			
Weights	50 mg 100 mg 200 mg 500 mg 1 g 5 g 10 g 20 g 50 g 100 g 500 g 1 kg 2 kg 10 kg 20 kg 50 kg 100 kg 200 kg 400 kg	1.0 mg 1.0 mg 1.0 mg 1.0 mg 1.0 mg 1.0 mg 1.0 mg 1.0 mg 1.0 mg 2.0 mg 3.0 mg 3.0 mg 0.10 g 0.10 g 0.10 g 200 mg 200 mg 250 mg 470 mg	Using Standard Weight F2/M1 Class and Balance as per ABBA Method (OIML R-111)
Torque Measuring Instruments	2.5 N·m to 400 N·m 400 N·m to 1500 N·m	1.2 N m 15 N m	Using Torque Tester – Direct method ISO6789:2017

** 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.*

MEASURED QUANTITY or DEVICE TYPE CALIBRATED	RANGE	UNCERTAINTY[1,2] (±)	CALIBRATION METHOD OR PROCEDURE, STANDARD EQUIPMENT (OPTIONAL)
Pneumatic Pressure Gauge/ Switch/ Transmitter/ Transducer	-0.8 bar to 35 bar	0.080 bar	Using Pressure Indicator PACE 1000 by comparison method RKD-R-6-1
Hydraulic Pressure Gauge/ Switch/ Transmitter/ Transducer	50 psi to 500 psi 500 psi to 10000 psi 10000 psi to 30000 psi	0.65 psi 0.82 psi 9.0 psi	Using Dead Weight Tester - DH Budenberg by comparison method RKD-R-6-1
Flow Meters	1 L/min to 9000 L/min	0.022 % (Using Prover) 0.038 % @ 1000 L/min 0.035 % @ 9000 L/min	SOP-09 Syncrotrak liquid flow prover, E+H Coriolis master meter API 5.6
Thermal			
RTD/Thermocouple Sensor with and without Indicators/ Temperature Gauges/ Thermometers	-20 °C to 155 °C 155 °C to 650 °C 300 °C to 1200 °C	0.13 °C 0.090 °C 0.80 °C	PRT/ S Type Sensor with Temp Readout by comparison method using Dry block/Liquid bath Euramet cg-08
Dry Well Block Calibrators and Temp Baths	-40 °C to 50 °C 50 °C to 650 °C 650 °C to 1200 °C	0.13 °C 0.25 °C 0.17 °C	PRT/ S Type Sensor with Temp Readout by single point calibration in comparison method Euramet Cg-13
Electrical – DC/LF			
DC Voltage Source[3]	Up to 330 mV 330 mV to 3.3 V 3.3 V to 33 V 33 V to 330 V 330 V to 1020 V	7.2 µV 0.040 mV 0.42 mV 7.4 mV 0.034 V	Using Fluke 5522A by Direct method Euramet cg-15
DC Current Source[3]	Up to 330 µA 330 µA 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	0.40 µA 0.0030 mA 0.020 mA 0.090 mA 0.040 A 0.96 A	
	20 A to 1000 A	0.96 A	Using Fluke 5500A & Current Coil by Direct method Euramet cg-15
AC Voltage Source[3]	(10 Hz to 10 kHz) 3 mV to 33 mV 33 mV to 330 mV 330 mV to 3.3 V 3.3 V to 33 V	 9.5 µV 0.80 mV 0.0050 V 0.0080 V	Using Fluke 5522A by Direct method Euramet cg-15

MEASURED QUANTITY or DEVICE TYPE CALIBRATED	RANGE	UNCERTAINTY[1,2] (±)	CALIBRATION METHOD OR PROCEDURE, STANDARD EQUIPMENT (OPTIONAL)
AC Voltage Source[3] continued	(45 Hz to 10 kHz) 33 V to 330 V 330 V to 1020 V	 0.090 V 0.33 V	Using Fluke 5522A by Direct method Euramet cg-15
AC Current Source[3]	(15 Hz to 30 kHz) 33 uA to 0.33 mA 0.33 mA to 3.3 mA 3.3 mA to 33 mA 33 mA to 330 mA 330 mA to 1.09 A (15 Hz to 5 kHz) 1.09 A to 3.3 A 3.3 A to 10.9 A	 0.50 µA 18 µA 0.34 mA 1.3 mA 33 mA 87 mA 330 mA	
	(45 Hz to 1 kHz) 10.9 A to 20 A 20 A to 1000 A	 0.61 A 1.1 A	Using Fluke 5500A & Current Coil by Direct method Euramet cg-15
Capacitance Source[3,5]	0.4 nF to 1.0999 nF 1.1 nF to 3.2999 nF 3.3 nF to 10.9999 nF 11 nF to 109.999 nF 110 nF to 329.999 nF 0.33 µF to 1.0999 µF 1.1 µF to 3.2999 µF 3.3 µF to 10.9999 µF 11 µF to 32.9999 µF 33 µF to 109.999 µF 110 µF to 329.999 µF 330 µF to 1099.9 µF	45 pF 150 pF 0.76 nF 8.0 nF 20 nF 80 nF 1.5 µF 0.51 µF 1.7 µF 5.6 µF 15 µF 56 µF	Using Fluke 5522A by Direct method Euramet cg-15
DC Resistance Source[3]	Up to 11 Ω 11 Ω to 33 Ω 33 Ω to 110 Ω 110 Ω to 1.1 kΩ 1.1 kΩ to 11 kΩ 11 kΩ to 110 kΩ 110 kΩ to 1.1 MΩ 1.1 MΩ to 3.3 MΩ 3.3 MΩ to 11 MΩ 11 MΩ to 33 MΩ 33 MΩ to 110 MΩ 110 MΩ to 330 MΩ 330 MΩ to 1100 MΩ	0.70 mΩ 1.3 mΩ 3.2 mΩ 33 mΩ 0.33 Ω 6.6 Ω 0.060 kΩ 0.29 kΩ 0.16 kΩ 0.11 MΩ 0.16 MΩ 1.5 MΩ 3.6 MΩ	
DC Resistance Measure[4]	1 Ω to 10 Ω 10 Ω to 100 Ω 100 Ω to 1 kΩ 1 kΩ to 10 kΩ 10 kΩ to 100 kΩ 100 kΩ to 1 MΩ	0.11 mΩ 0.70 mΩ 3.7 mΩ 37 mΩ 0.37 Ω 4.3 Ω	Using Fluke 8508A by Direct method Euramet cg-15

MEASURED QUANTITY or DEVICE TYPE CALIBRATED	RANGE	UNCERTAINTY[1,2] (±)	CALIBRATION METHOD OR PROCEDURE, STANDARD EQUIPMENT (OPTIONAL)
DC Resistance Measure[4] cont'd.	1 MΩ to 10 MΩ 10 MΩ to 100 MΩ 100 MΩ to 1 GΩ	120 Ω 18 kΩ 0.25 MΩ	Using Fluke 8508A by Direct method Euramet cg-15
DC Voltage Measure[4]	100 mV to 1 V 1 V to 10 V 10 V to 20 V 20 V 100 V 100 V to 1000 V	1.2 nV 12 nV 21 nV 0.16 mV 1.6 mV	SOP-07 Fluke 8508A Euramet cg-15
AC Voltage Measure[4]	1 mV to 100 mV (20 Hz to 100 kHz) 100 mV to 1 V (20 Hz to 1 MHz) 1 V to 10 V (1 kHz to 1 MHz) 10 V to 20 V (1 kHz to 1 MHz) 20 V to 100 V (1 kHz to 100 kHz) 100 V to 1000 V (55 Hz to 1 kHz)	 0.025 mV 0.0086 V 0.086 V 0.00042 V 0.021 V 0.083 V	Using Fluke 8508A by Direct method Euramet cg-15
DC Current Measure[4]	100 µA to 1 mA 1 mA to 10 mA 10 mA to 100 mA 100 mA to 1 A 1 A to 10 A	10 nA 75 nA 1.9 µA 85 nA 6.2 mA	
AC Current Measure[4]	(300 Hz to 10 kHz) Up to 100 µA 100 µA to 1 mA 1 mA to 10 mA 10 mA to 100 mA 100 mA to 1 A 1 A to 10 A	 0.022 µA 0.00023 mA 0.0023 mA 0.021 mA 0.00039 A 0.0010 A	
Time and Frequency			
Frequency Source[3]	100 Hz to 1 kHz 1 kHz to 100 kHz	5.7 Hz 13 Hz	Using Fluke 5522A by Direct method Euramet cg-15
Frequency Measure[4]	Up to 1 MHz	15 Hz	Using Fluke 8508A by Direct method Euramet cg-15

[1]The 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 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.

[2]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.

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

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

[5]The actual frequency applied by the calibrator cannot be selected and may be dependent on the measurement device under calibration. Approximate frequency ranges for a given capacitance or capacitance range may be found in the Fluke 5522A's published specifications.

FS = Full Scale