



# CERTIFICATE OF ACCREDITATION

*This is to attest that*

## **SAUDI ARABIAN ENGINEERING CO. LTD. (SAECO)**

SECOND INDUSTRIAL CITY  
DAMMAM, 31952, KINGDOM OF 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 March 28, 2022

Expiration Date August 1, 2025



A handwritten signature in black ink, reading 'Raj Nathan'.

**President**

# SCOPE OF ACCREDITATION

International Accreditation Service, Inc.

3060 Saturn Street, Suite 100, Brea, California 92821, U.S.A. | www.iasonline.org

## SAUDI ARABIAN ENGINEERING CO. LTD. (SAECO)

www.rezayatsaeco.com

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**Contact Phone** + 966-13-882-5200

Ext. 6576

Accredited to ISO/IEC 17025:2017

Effective Date March 28, 2022

### CALIBRATION AND MEASUREMENT CAPABILITY (CMC)\*

MEASURED QUANTITY or DEVICE TYPE CALIBRATED	RANGE	UNCERTAINTY <sup>1,2</sup> (±)	CALIBRATION METHOD OR PROCEDURE, STANDARD EQUIPMENT (OPTIONAL)
<i>Dimensional</i>			
Calipers	0 mm to 300 mm	6 µm	Using Gauge Blocks Set as per ISO 13385-1
Micrometer- Outside	0 mm to 300 mm	6 µm	Using Gauge Blocks Set as per ISO 3611
Dial Gauge	0 mm to 150 mm	6 µm	Using Gauge Blocks Set as per ISO 9493
<i>Mechanical</i>			
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 mg 1 mg 1 mg 1 mg 1 mg 1 mg 1 mg 1 mg 1 mg 2 mg 3 mg 3 mg 0.1 g 0.1 g 0.1 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.

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Pneumatic Pressure Gauge/ Switch/ Transmitter/ Transducer	-0.8 bar to 35 bar	0.002 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 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 Syncotrak liquid flow prover, E+H Coriolis master meter API 5.6
<b>Thermal</b>			
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 0.09 °C 0.6 °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
<b>Electrical – DC/LF</b>			
DC Voltage Source <sup>3</sup>	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	6.8 µV 0.04 mV 0.42 mV 7.4 mV 0.034 V	Using Fluke 5522A by Direct method Euramet cg-15
DC Current Source <sup>3</sup>	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 20 A to 1000 A	0.4 µA 0.003 mA 0.02 mA 0.09 mA 0.04 A 0.96 A	
AC Voltage Source <sup>3</sup>	(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 0.8 mV 0.005 V 0.008 V	Using Fluke 5522A by Direct method Euramet cg-15

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AC Voltage Source <sup>3</sup> continued	(45 Hz to 10 kHz) 33 V to 330 V 330 V to 1020 V	0.09 V 0.33 V	Using Fluke 5522A by Direct method Euramet cg-15
AC Current Source <sup>3</sup>	(15 Hz to 30 kHz) 33 $\mu$ A 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	0.5 $\mu$ A 18 $\mu$ A 0.34 mA 1.3 mA 33 mA	Using Fluke 5500A & Current Coil by Direct method Euramet cg-15
	(15 Hz to 5 kHz) 1.09 A to 3.3 A 3.3 A to 10.9 A	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	
Capacitance Source <sup>3,5</sup>	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 nF to 1.0999 $\mu$ F 1.1 $\mu$ F to 3.2999 $\mu$ F 3.3 $\mu$ F to 10.9999 $\mu$ F 11 $\mu$ F to 32.9999 $\mu$ F 33 $\mu$ F to 109.999 $\mu$ F 110 $\mu$ F to 329.999 $\mu$ F 330 $\mu$ F to 1099.9 $\mu$ F 1100 $\mu$ F to 3299.9 $\mu$ F 3300 $\mu$ F to 10999 $\mu$ F 11000 $\mu$ F to 32999 $\mu$ F 33000 $\mu$ F to 110000 $\mu$ F	45 pF 150 pF 0.76 nF 8 nF 20 nF 80 nF 1.5 $\mu$ F 0.51 $\mu$ F 1.7 $\mu$ F 5.6 $\mu$ F 15 $\mu$ F 56 $\mu$ F 1.1 $\mu$ F 4.1 $\mu$ F 12 $\mu$ F 41 $\mu$ F	Using Fluke 5522A by Direct method Euramet cg-15
DC Resistance Source <sup>3</sup>	Up to 11 $\Omega$ 11 $\Omega$ to 33 $\Omega$ 33 $\Omega$ to 110 $\Omega$ 110 $\Omega$ to 1.1 k $\Omega$ 1.1 k $\Omega$ to 11 k $\Omega$ 11 k $\Omega$ to 110 k $\Omega$ 110 k $\Omega$ to 1.1 M $\Omega$ 1.1 M $\Omega$ to 3.3 M $\Omega$ 3.3 M $\Omega$ to 11 M $\Omega$ 11 M $\Omega$ to 33 M $\Omega$ 33 M $\Omega$ to 110 M $\Omega$ 110 M $\Omega$ to 330 M $\Omega$ 330 M $\Omega$ to 1100 M $\Omega$	0.7 m $\Omega$ 1.3 m $\Omega$ 3.2 m $\Omega$ 33 m $\Omega$ 0.33 $\Omega$ 6.6 $\Omega$ 0.06 k $\Omega$ 0.29 k $\Omega$ 0.16 k $\Omega$ 0.11 M $\Omega$ 0.16 M $\Omega$ 1.5 M $\Omega$ 3.6 M $\Omega$	

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DC Resistance Measure <sup>4</sup>	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 1 MΩ to 10 MΩ 10 MΩ to 100 MΩ 100 MΩ to 1 GΩ	49 μΩ 0.37 mΩ 3.7 mΩ 37 mΩ 0.37 Ω 4.3 Ω 120 Ω 7.3 kΩ 0.25 MΩ	Using Fluke 8508A by Direct method Euramet cg-15
DC Voltage Measure <sup>4</sup>	100 mV to 1 V 1 V to 10 V 10 V to 20 V 20 V to 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 <sup>4</sup>	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 <sup>4</sup>	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	7 nA 75 nA 1.9 μA 85 nA 1.8 mA	
AC Current Measure <sup>4</sup>	(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 0.00103 A	
<b>Time and Frequency</b>			
Frequency Source <sup>3</sup>	100 Hz to 1 kHz 1 kHz to 100 kHz	5.7 Hz 13 Hz	Using Fluke 5522A by Direct method Euramet cg-15

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Frequency Measure <sup>4</sup>	Up to 1 MHz	15 Hz	Using Fluke 8508A by Direct method Euramet cg-15

<sup>1</sup>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.

<sup>2</sup>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.

<sup>3</sup>Capability is suitable for the calibration of measuring devices in the stated ranges.

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

<sup>5</sup>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