Schedule of Accreditation

issued by

United Kingdom Accreditation Service

21 - 47 High Street, Feltham, Middlesex, TW13 4UN, UK

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Accredited to ISO/IEC 17025:2005

ITS Testing Services (UK) Limited (Aberdeen) trading as Calibration and Metering Services

Issue No: 049 **Issue date**: 30/03/12

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Calibration performed by the Organisation at the locations specified below

Locations covered by the organisation and their relevant activities

Laboratory locations:

Location details	Activity	Location code
Address - as above	DC & LF Electrical Pressure Temperature Volume tanks and provers Liquid and gas density Orifice plates	Lab

Site activities performed away from the locations listed above:

Location details	Activity	Location code
Any customer premises	Volume - pipe provers Flow	Site

DETAIL OF ACCREDITATION

Measured Quantity Instrument or Gauge	Range	Calibration and Measurement Capability Expressed as an Expanded Uncertainty (k = 2)	Remarks	Location
ELECTRICAL MEASUREMENTS				
DC RESISTANCE				Lab
Measurement	0 Ω to 1 Ω 1 Ω to 10 Ω 10 Ω to 100 Ω 100 Ω to 1 kΩ 1 kΩ to 10 k Ω 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	66 μΩ 60 ppm 60 ppm 9.0 ppm 8.0 ppm 13 ppm 25 ppm 130 ppm 250 ppm 0.3 %	Measurement of resistors with negligible power dissipation	
Specific Value	50 Ω	14 ppm		
Generation	1 Ω 10 Ω 100 Ω 1 kΩ 10 kΩ 100 kΩ 1 MΩ 10 MΩ	64 ppm 8.0 ppm 5.0 ppm 17 ppm 10 ppm 6.0 ppm 9.0 ppm 25 ppm		
DC VOLTAGE				Lab
Measurement	0 mV to 10 mV 10 mV to 100 mV 100 mV to 1 V 1 V to 10 V 10 V to 100 V 100 V to 1 kV	1.5 μV 8.0 ppm +1.3 μV 5.0 ppm + 1.6 μV 12 ppm 12 ppm 14 ppm		
Generation	0 mV to 220 mV 220 mV to 2.2 V 2.2 V to 11 V 11 V to 22 V 22 V to 220 V 220 V to 1000 V	7.5 ppm + 1.0 μV 6.0 ppm + 1.5 μV 6.0 ppm 6.0 ppm 6.5 ppm 9.0 ppm		
DC CURRENT				Lab
Measurement	0 μA to 1 μA 1 μA to 10 μA 10 μA 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 2.2 A 2.2 A to 11 A	150 pA 140 pA 120 ppm 95 ppm 95 ppm 100 ppm 250 ppm 250 ppm 370 ppm		

Measured Quantity Instrument or Gauge	Range	Calibration and Measurement Capability Expressed as an Expanded Uncertainty (k = 2)	Remarks	Location
DC CURRENT(cont'd)				Lab
Measurement	0 μA to 1 μA 1 μA to 10 μA 10 μA 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 2.2 A 2.2 A to 11 A	150 pA 140 pA 120 ppm 95 ppm 95 ppm 100 ppm 250 ppm 250 ppm 370 ppm		
Generation	0 mA to 2.2 mA 2.2 mA to 22 mA 22 mA to 220 mA 220 mA to 2.2 A 2.2 A to 11 A	20 ppm + 12 nA 17 ppm + 120 nA 24 ppm + 1.2 μA 30 ppm + 35 μA 370 ppm	A multi-turn coil is available to simulate current up to 500A but at increased uncertainties. For the calibration of clamp-on ammeters.	
AC VOLTAGE				Lab
Measurement	*50 Hz to 1 kHz* 1 mV to 10 mV 10 mV to 100 mV	 3.5 μV 15 μV		
	50 Hz to 20 kHz 100 mV to 1 V 1 V to 10 V 10 V to 100 V 100 V to 700 V	 650 ppm 650 ppm 650 ppm 0.15%		
Generation	*60 Hz to 20 kHz* 10 mV to 220 mV 220 mV to 2.2 V 2.2 V to 22 V	 90 ppm 70 ppm 70 ppm		
	60 Hz to 11 kHz 22 V to 1100 V	 90 ppm		
AC CURRENT				Lab
Measurement	*50 Hz to 1 kHz* 10 μA to 100 μA 100 μA to 1 mA 1 mA to 10 mA 10 mA to 100 mA 100 mA to 1 A	 70 nA 490 nA 120 ppm + 3.0 μA 80 ppm + 30 μA 200 ppm + 300 μA		
	60 Hz to 400 Hz 1 A to 2.2 A 2.2 A to 11 A	 760 ppm 580 ppm		

Measured Quantity Instrument or Gauge	Range	Calibration and Measurement Capability Expressed as an Expanded Uncertainty (k = 2)	Remarks	Location
AC CURRENT (cont'd)				Lab
Generation	*60 Hz to 400 Hz* 2.2 mA to 2.2 A 2.2 A to 11 A	 250 ppm 570 ppm	A multi-turn coil is available to simulate current up to 500A but at increased uncertainties. For the calibration of clamp-on ammeters.	
Frequency				
Measurement	0.01 Hz to 0.1 Hz 0.1 Hz to 1 Hz 1 Hz to 10 Hz	2.0 in 10^2 2.0 in 10^3 2.0 in 10^4	By multi-period measurement	Lab
	10 Hz to 100 Hz 100 Hz to 1 kHz 1 kHz to 10 kHz 10 kHz to 100 kHz 100 kHz to 1 MHz 1 MHz to 1.3 GHz	2.0 in 10^5 2.0 in 10^6 2.0 in 10^7 2.0 in 10^7 7.0 in 10^8 5.0 in 10^8	By direct frequency measurement	
Generation	10 MHz	3.0 in 10^{11}		
Time Interval	100 ns to 1000 s	50 ns		Lab
Temperature indicators, calibration by electrical simulation				Lab
Base metal thermocouples	- 200 °C to 0 °C 0 °C to 1372 °C	0.30 °C 0.20 °C	Including cold junction compensation	
Noble metal thermocouples	- 50 °C to 0 °C 0 °C to 1768 °C	1.1 °C 0.90 °C	Including cold junction compensation	
Resistance thermometers (PT 100)	- 200 °C to 800 °C	0.050 °C		
Temperature simulators, calibration by electrical simulation				Lab
Base metal thermocouples	- 200 °C to 0 °C 0 °C to 1372 °C	0.30 °C 0.20 °C	Including cold junction compensation	
Noble metal thermocouples	- 50 °C to 0 °C 0 °C to 1768 °C	1.1 °C 0.90 °C	Including cold junction compensation	

Measured Quantity Instrument or Gauge	Range	Calibration and Measurement Capability Expressed as an Expanded Uncertainty (k = 2)	Remarks	Location
Temperature simulators, calibration by electrical simulation (cont'd)				Lab
Resistance thermometers (PT 100)	- 200 °C to 800 °C	0.020 °C		
Cold Junction Compensation	Nominal Ambient 17 °C to 23 °C	0.16 °C		
TEMPERATURE MEASUREMENTS				Lab
Analogue and Digital Thermometers				
PRT Sensor	- 25 °C to + 200 °C	0.040 °C		
Thermocouple and Thermistor Sensors	- 25 °C to + 200 °C	0.25 °C		
Resistance Thermometer (100 Ω)	- 25 °C to + 200 °C	0.050 °C		
PRESSURE MEASUREMENTS				Lab
Gas Pressure (gauge)				
"Pressure equivalent" calibration of Dead Weight Testers (pressure balances supplied with an associated mass set)	2.5 kPa to 3.5 kPa 3.5 kPa to 100 kPa 100 kPa to 2.6 MPa	0.013 % + 0.30 Pa 0.0080 % + 0.30 Pa 0.0080 % + 1.5 Pa	Calibrations may be undertaken expressed in other units of pressure if required.	
"Pressure equivalent" calibration of Ametek gas pressure standards	2.5 kPa to 3.5 kPa 3.5 kPa to 100 kPa 100 kPa to 2.6 MPa	0.013 % + 0.30 Pa 0.010 % + 0.30 Pa 0.010 % + 1.5 Pa	Pressure and Differential pressure transmitters with electrical outputs may be calibrated.	

Measured Quantity Instrument or Gauge	Range	Calibration and Measurement Capability Expressed as an Expanded Uncertainty (k = 2)	Remarks	Location
PRESSURE MEASUREMENTS (cont'd)				Lab
Calibration of pressure indicating instruments and gauges	- 90 kPa to - 3.5 kPa 1.5 kPa to 3.5 kPa 3.5 kPa to 100 kPa 100 kPa to 1 MPa 1 MPa to 21 MPa	0.010 % + 0.30 Pa 0.012 % + 0.30 Pa 0.0080 % + 0.30 Pa 0.0080 % + 1.5 Pa 0.0080 %	Differential pressure cells may be calibrated using the digital communication protocol.	
Hydraulic Pressure (gauge)				
"Pressure equivalent" calibration of Dead Weight Testers (pressure balances supplied with an associated mass set) and calibration of pressure indicating instruments and gauges	0.5 MPa to 7 MPa 7 MPa to 70 MPa 70 MPa to 140 MPa	0.0080 % + 30 Pa 0.0080 % + 300 Pa 0.012 % + 600 Pa		
Gas Pressure (differential)				
Calibration of pressure indicating instruments and gauges	*Line pressure 1 MPa to 21 MPa* 1.5 kPa to 1 MPa	0.60 ppm of line pressure, plus 0.0080 % of differential pressure, plus 10 Pa		
DIMENSIONAL				
Orifice Plates	BS EN ISO 5167-2:2003 Orifice plates with the following bore 'd' diameters 12.5 mm to 300 mm 300 mm to 375 mm	 0.014 mm 0.015 mm		Lab
Liquid density transducers				Lab
Air Oil	1.2 kgm^{-3} 886 kgm^{-3} to 888 kgm^{-3}	0.10 kgm^{-3} 0.21 kgm^{-3}	At temperatures between 20 °C and 20.5 °C	

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Gas density transducers				Lab
Nitrogen	9 kgm^{-3} to 256 kgm^{-3}	0.13 %		
Argon	35 kgm^{-3} to 413 kgm^{-3}	0.13 %		
Volume				Lab
Calibration of compact provers	20 l to 40 l 40 l to 50 l 50 l to 120 l 120 l to 130 l	0.036 % 0.023 % 0.018 % 0.016 %		
Calibration of Volume vessels	20 l 40 l 60 l 80 l 100 l 120 l 140 l	0.023 % 0.018 % 0.015 % 0.015 % 0.014 % 0.014 % 0.013 %		Lab
Volume				
Calibration of pipe Provers				
Water	At flow rates of 300 l/min to 3000 l/min	0.025 %	Pipe provers from 4" to 36"	Site
Hydrocarbons	At flow rates of 300 l/min to 3000 l/min	0.040 %		
Flow				Site
Water volume flow rate	0.95 l/min to 6623 l/min	0.025 %	Suitable for the calibration of 2" to 6" turbine meters	
Hydrocarbon volume flow rate	0.95 l/min to 6623 l/min	0.040 %		
END				