



CERTIFICATE OF ACCREDITATION

ANSI-ASQ National Accreditation Board

500 Montgomery Street, Suite 625, Alexandria, VA 22314, 877-344-3044

This is to certify that

Global Thermal Solutions, LLC.
José Maria Truchuelo No. 10, Col. Cimatarío
Querétaro, QRO. 76030, México

has been assessed by ANAB
and meets the requirements of international standard

ISO/IEC 17025:2017

while demonstrating technical competence in the field of

CALIBRATION

Refer to the accompanying Scope of Accreditation for information regarding the types of calibrations to which this accreditation applies.

L2431

Certificate Number


ANAB Approval

Certificate Valid: 09/27/2018-10/27/2020
Version No. 002 Issued: 09/27/2018



This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017. 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).



SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017

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CALIBRATION

Valid to: **October 27, 2021**

Certificate Number: **L2431**

Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
DC Current: Measuring Devices	(>0 to 20) mA	0.011 mA	Martel 3001 Multifunction Precision Bench Calibrator used in generate/source mode
DC Current: Source Devices	(>0 to 20) mA	8.9 µA	
Electrical Simulation of RTD Temperature Simulators/Calibrators	Pt 385, 100 Ω (-200 to 0) °C (>0 to 300) °C (>300 to 600) °C (>600 to 800) °C	0.05 °C 0.13 °C 0.17 °C 0.06 °C	Martel 3001 Multifunction Precision Bench Calibrator used in measuring mode
DC Voltage: Measuring Devices	(>0 to 0.1) V (> 0.1 to 10) V	0.01 mV 5.9 mV	Martel 3001 Multifunction Precision Bench Calibrator used in generation/source mode
DC Voltage: Source Devices	(>0 to 10) V	0.004 4 V	Martel 3001 Multifunction Precision Bench Calibrator used in measuring mode
Electrical Simulation of Thermocouple Temperature Simulators	Type K (-100 to 300) °C (>300 to 600) °C (>600 to 900) °C (>900 to 1 300) °C Type J (0 to 300) °C (>300 to 600) °C (>600 to 900) °C	0.32 °C 0.32 °C 0.33 °C 0.32 °C 0.27 °C 0.27 °C 0.32 °C	Martel 3001 Multifunction Precision Bench Calibrator used in generate/source mode



Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Electrical Simulation of Thermocouple Temperature Simulators	Type N (-100 to 300) °C	0.26 °C	Martel 3001 Multifunction Precision Bench Calibrator used in generate/source mode
	(>300 to 600) °C	0.32 °C	
	(>600 to 900) °C	0.34 °C	
	(>900 to 1 300) °C	0.33 °C	
	Type R (0 to 300) °C	0.41 °C	
	(>300 to 600) °C	0.38 °C	
	(>600 to 900) °C	0.38 °C	
	(>900 to 1 300) °C	0.44 °C	
	Type S (0 to 300) °C	0.4 °C	
	(>300 to 600) °C	0.4 °C	
	(>600 to 900) °C	0.4 °C	
	(>900 to 1 300) °C	0.41 °C	
	Type B (600 to 900) °C	0.38 °C	
	(>900 to 1 200) °C	0.37 °C	
	(>1 200 to 1 500) °C	0.36 °C	
	(>1 500 to 1 800) °C	0.38 °C	
Type T (-100 to 0) °C	0.28 °C		
(>0 to 200) °C	0.23 °C		
(>200 to 400) °C	0.32 °C		
Electrical Simulation of Thermocouple Temperature Indicators/Recorders	Type K (-100 to 300) °C	0.33 °C	Thermocouple Temperature Simulator in accordance with SAE/AMS 2750 and AIAG/CQI-9.
	(>300 to 600) °C	0.33 °C	
	(>600 to 900) °C	0.33 °C	
	(>900 to 1 300) °C	0.33 °C	
	Type J (0 to 300) °C	0.28 °C	
	(>300 to 600) °C	0.28 °C	
	(>600 to 900) °C	0.32 °C	
	Type N (-100 to 300) °C	0.28 °C	
	(>300 to 600) °C	0.33 °C	
	(>600 to 900) °C	0.35 °C	
	(>900 to 1 300) °C	0.34 °C	



Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Electrical Simulation of Thermocouple Temperature Indicators/Recorders	Type R		Thermocouple Temperature Simulator in accordance with SAE/AMS 2750 and AIAG/CQI-9.
	(0 to 300) °C	0.4 °C	
	(>300 to 600) °C	0.39 °C	
	(>600 to 900) °C	0.39 °C	
	(>900 to 1 300) °C	0.44 °C	
	Type S		
	(0 to 300) °C	0.41 °C	
	(>300 to 600) °C	0.41 °C	
	(>600 to 900) °C	0.41 °C	
	(>900 to 1 300) °C	0.5 °C	
	Type B		
	(600 to 900) °C	0.39 °C	
	(>900 to 1 200) °C	0.38 °C	
	(>1 200 to 1 500) °C	0.36 °C	
	(>1 500 to 1 800) °C	0.39 °C	
	Type T		
	(-100 to 0) °C	0.27 °C	
	(>0 to 200) °C	0.24 °C	
	(>200 to 400) °C	0.24 °C	
	Type J		
	(0 to 300) °C	0.31 °C	
	(>300 to 600) °C	0.31 °C	
	(>600 to 900) °C	0.41 °C	
	Type K		
(-100 to 300) °C	0.41 °C		
(>300 to 600) °C	0.41 °C		
(>600 to 900) °C	0.41 °C		
(>900 to 1 300) °C	0.41 °C		
Type R			
(0 to 300) °C	0.81 °C		
(>300 to 600) °C	0.8 °C		
(>600 to 900) °C	0.7 °C		
(>900 to 1 300) °C	0.73 °C		
Type S			
(0 to 300) °C	1.1 °C		
(>300 to 600) °C	0.81 °C		
(>600 to 900) °C	0.81 °C		
(>900 to 1 300) °C	0.81 °C		





Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Electrical Simulation of Thermocouple Temperature Indicators, Recorders and Controllers ¹	Type N		Thermocouple Temperature Simulator in accordance with SAE/AMS 2750 and AIAG/CQI-9.
	(-100 to 300) °C	0.36 °C	
	(>300 to 600) °C	0.41 °C	
	(>600 to 900) °C	0.42 °C	
	(>900 to 1 300) °C	0.49 °C	
	Type T		
	(-100 to 0) °C	0.38 °C	
	(>0 to 200) °C	0.27 °C	
	(>200 to 400) °C	0.35 °C	
	Type B		
	(600 to 900) °C	1.4 °C	
	(>900 to 1 200) °C	0.9 °C	
(>1 200 to 1 500) °C	0.79 °C		
(>1 500 to 1 800) °C	0.8 °C		

Thermodynamic

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Furnace Temperature System Accuracy Test (SAT) ¹	Type K		TC Temperature Indicator with Reference Thermocouple wire in accordance with SAE/AMS 2750, AIAG/CQI-9 and ANSI/API 16A
	(-100 to 300) °C	1.2 °C	
	(>300 to 600) °C	1.4 °C	
	(>600 to 900) °C	1.4 °C	
	(>900 to 1 300) °C	2.2 °C	
	Type N		
	(-100 to 300) °C	1.4 °C	
	(>300 to 600) °C	1.4 °C	
	(>600 to 900) °C	1.4 °C	
	(>900 to 1 300) °C	2.2 °C	
	Type B		
	(600 to 900) °C	1.4 °C	
	(>900 to 1 200) °C	1.4 °C	
	(>1 200 to 1 500) °C	2.2 °C	
	(>1 500 to 1 800) °C	2.2 °C	
	Type J		
	(0 to 300) °C	1.2 °C	
	(>300 to 600) °C	1.2 °C	
(>600 to 900) °C	1.2 °C		



Thermodynamic

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Furnace Temperature System Accuracy Test (SAT) ¹	Type T (600 to 900) °C (>900 to 1 200) °C (>1 200 to 1 500) °C	1.1 °C 1.1 °C 1.1 °C	TC Temperature Indicator with Reference Thermocouple wire in accordance with SAE/AMS 2750, AIAG/CQI-9 and ANSI/API 16A
Furnace Temperature Uniformity Surveys (TUS) ¹	Type J (0 to 300) °C (>300 to 600) °C (>600 to 900) °C Type K (-100 to 300) °C (>300 to 600) °C (>600 to 900) °C (>900 to 1 300) °C Type N (-100 to 300) °C (>300 to 600) °C (>600 to 900) °C (>900 to 1 300) °C Type T (-100 to 0) °C (>0 to 200) °C (>200 to 400) °C	1.2 °C 1.3 °C 1.3 °C 1.2 °C 1.4 °C 1.4 °C 2.2 °C 1.2 °C 1.4 °C 1.4 °C 2.2 °C 1.5 °C 1.3 °C 1.3 °C	Thermocouple Temperature Logger with Reference Thermocouple wire in accordance with SAE/AMS 2750, AIAG/CQI-9 and ANSI/API 16A

Calibration and Measurement Capability (CMC) is expressed in terms of the measurement parameter, measurement range, expanded uncertainty of measurement and reference standard, method, and/or equipment. The expanded uncertainty of measurement is expressed as the standard uncertainty of the measurement multiplied by a coverage factor of 2 ($k=2$), corresponding to a confidence level of approximately 95%.

Notes:

1. On-site calibration service is available for this parameter, since on-site conditions are typically more variable than those in the laboratory, larger measurement uncertainties are expected on-site than what is reported on the accredited scope.
2. This scope is formatted as part of a single document including Certificate of Accreditation No. L2431.

Vice President