



Jayasree Reva Phoenix Metrology Pvt. Ltd.

Calibration | Inspection | Testing | Training | Services

ISO 9001:2015 Certified | ISO/IEC 17025:2017 Accredited



Thermal Metrology | Training Brochure

INTRODUCTION

Thermal calibration involves comparing the readings of a device under test (DUT) with a reference standard of known accuracy, typically a calibrated temperature sensor or a standard blackbody radiation source. During the calibration process, adjustments may be made to the DUT to bring its readings into agreement with the reference standard. The accuracy of the DUT is then determined by comparing the readings before and after adjustment.

COURSE FEATURES

Training course covers the following contents:

- Practical & Theoretical Training of Thermal Calibration
- Specific Criteria & Guidelines Thermal Calibration
- Estimation and Expression of Uncertainty in Measurement as per NABL 141
- Calibration and Measurement Capability (CMC) and Measurement Uncertainty in Calibration as per NABL 143
- Participation in Proficiency Testing Activities as per NABL 163
- Guidelines for Interlaboratory Comparison as per NABL 164



IR Thermometer |
Thermal Imager



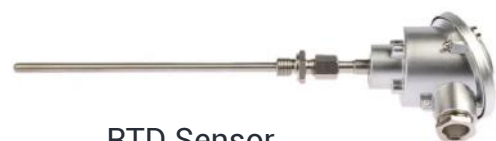
Humidity Chamber



Black Body Source



Ultra Low Deep Freezer



RTD Sensor

TRAINING MATERIAL



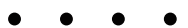
Material in soft for Thermal metrology as per ISO/IEC 17025: 2017, NABL oriented best-in-class training material traceable to National and International Standard requirements.

PRINCIPLE | THEORY

The temperature measurement sensor is compared with a reference sensor with a known, high level of accuracy. Resistance thermometers consist of one or more sensing resistors with wire leads and protective sheath. The resistors are manufactured from Platinum, Copper or Nickel. They have a known value at a temperature of 0^oc and by changing the temperature, the resistor's value changes. Each material has a characteristic and well defined polynomial equation which provides the measuring temperature as output when the resistance is at 0^oc and the measured resistance at the temperature under measurement are used as inputs.

CALIBRATION RANGE

- SPRT | PRT | RTD Sensor | Thermocouple (-196^oc & -80 to 1200^oc)
- Glass Thermometer (-80 to 250^oc)
- Hygrometer | Humidity Sensor (10 to 95% RH, 5 to 60^oc)
- Infra-red Thermometer (50 to 1200^oc)
- Pyrometer | Thermal Imager (50 to 1700^oc)
- Humidity Chamber (Multi | Single: 10 to 95% RH, 5 to 60^oc)
- Ultra Low Deep Freezer | Refrigerator | Incubator (-80 to 100^oc)
- Furnace (Multi Position: 100 to 1200^oc | Single Position: 100 to 1700^oc)
as per API 6A, API 6D, API 20H-HSL-1, NORSOK M650, ASTM A991:2022
- Black Body Source

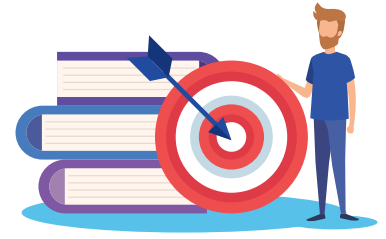


EXPECTED PARTICIPANTS

- Laboratory Managers
- Calibration and Testing Engineers
- Laboratory Engineers
- Quality Managers
- Metrology Professionals
- NABL Lab Engineers



OBJECTIVES OF THERMAL WORKSHOP



- Basic knowledge of calibration such as requirements of calibration, why do we need calibration, equipment selection, types of equipments, metrological traceability, selection of calibration agency etc.
- Understand requirement of ISO/IEC 17025:2017 requirements for measurement uncertainty.
- Understand theory of uncertainty of measurement, selection of uncertainty measurement factors, and calculation of measurement uncertainty.
- Understand the relevance of instrument measurement, including the use of instrument.
- Understand technical requirements and calibration method for relevant instruments.
- Preparation of calibration certificates and work sheet.

COURSE CONTENT

Course content covers the following topics:

- Comprehensive Trainer's Guide
- Power Point Presentation: Thermal Metrology
- Introduction to Measurements, Fundamental & Derived Units
- Standards Organizations and Document Standards
- Calibration Procedures | Methods | Processes
- Practical example from the trainer selecting the best solution
- Documentation Training as per ISO/IEC 17025: 2017
- Measurement Uncertainty
- Questions & Answers
- Practical examples from your business (In-house courses only)
- Summary & Review



WORKSHOP METHODOLOGY



TRAINING SESSION

Theoretical training on the basics of the subject.

- Thermal Laboratory



WORKSHOP & TEAM EXERCISES

Case studies from relevant industry samples taken up in line with the guidelines and formats.

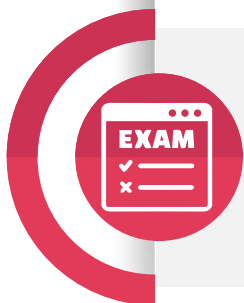
- Thermal Laboratory



GRADED EXERCISE

Graded exercises to evaluate individual participant's progress during the course.

- Thermal Laboratory



FINAL EXAMS

Business as usual, we have a final examination to evaluate and certify the participants.



CONTINUING SUPPORT

We provide continuing support to new projects and provide project assistance based on client requirements.

CERTIFICATION

- Certificate of course completion to successful participants.
- Attendance for the entire duration of the course is compulsory.



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Dimensional | Pressure | Torque | Force | Hardness | Impact | Mass | Volume |
Electro-Technical | Thermal | Acoustics | Acceleration & Speed | Fluid Flow | Optical |
UTM | TTM | Tachometer | Anemometer | Durometer | Lux Meter | Push Pull Gauge |
Rockwell | Brinell | Vickers | Micro Vickers | Mechanical Testing | Impact Testing :
Mechanical Properties of Metals and Non-Metals



CONTACT US

Head Office / Laboratory

Reva Phoenix Complex, No. 14, 4th Street, Raja Rajeswari Nagar, Madipakkam, Chennai – 600 091, Tamilnadu, India.



+91 98406 72352



enquiry@revaphoenix.com



www.revacalibration.com