



# Jayasree Reva Phoenix Metrology Pvt. Ltd.

Calibration | Inspection | Testing | Training | Services

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



## Torque Wrench Metrology | Training Brochure

### INTRODUCTION

Torque wrench calibration is the process of verifying and adjusting the accuracy of a torque wrench to ensure that it is measuring torque values within the specified tolerance range. Torque wrench calibration system which complies to ISO:6789 International Standards. Torque wrenches are essential tools for many industries, including Automotive, Aerospace, and Manufacturing.

## COURSE FEATURES

Training course covers the following contents:

- Practical & Theoretical Training of Torque Wrench Calibration
- Specific Criteria & Guidelines Torque Wrench 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



Torque Wrench



Digital Torque Wrench



Indicating Torque Wrench

## TRAINING MATERIAL



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

## PRINCIPLE | THEORY

Torque is calculated by multiplying the force applied to an object by the distance from the center of rotation or axis that the force is applied. In its simplest form, the formula for torque is  $T = F \times L$ , where T is the torque, F is the force and L is the linear length from the axis. In the case of tightening a bolt, the torque is equal to the amount of force your arm is using to move the wrench times the distance from the head of the bolt to where your hand is positioned on the wrench. Moving your hand closer or farther away from the bolt will change the amount of torque being applied to the bolt

## CALIBRATION RANGE

Torque Generating Devices (0 to 3000 Nm)

- Torque Wrenches
- Torque Screw Driver
- Click Type Torque Wrenches
- Indicating | Dial Torque Wrenches
- Digital Torque Wrenches

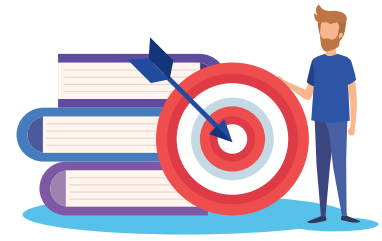


## EXPECTED PARTICIPANTS

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



# OBJECTIVES OF TORQUE 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: Torque Generating Device 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.

- Torque Calibration Laboratory



## WORKSHOP & TEAM EXERCISES

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

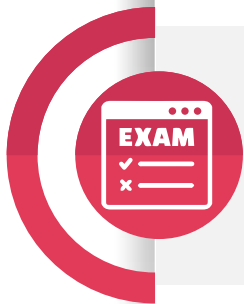
- Torque Calibration Laboratory



## GRADED EXERCISE

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

- Torque Calibration 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

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