



TORQUE METROLOGY PART 2

Aim of Course

This course builds on the foundation laid in Part 1 of the course and will benefit anybody who performs calibrations of Torque Transducers. Learners are introduced to numerous Torque Transducers in use in industry. It aims to provide a more detailed introduction to torque measurement principles and how these are applied in the calibration of Torque Transducers specifically. Learners will be guided through the most commonly used German Standard DIN 51309 used for these calibrations which includes the calculation of the measurement uncertainty and generation of the calibration certificate. Various Torque Transducers will be practically calibrated by the learners during the course.

Pre-Requisites for attending this course

The satisfactory completion of the following courses is *strongly* recommended:

- Introduction to Measurement
- Method Validation (Calibration)
- Uncertainty of Measurement – GUM (Physical)
- Torque Metrology Part 1

Course requirements

It would be beneficial if attendees are in a position to bring a laptop, this will enhance their learning experience since some exercises will be easier to complete.

Course Overview

Introduction

Fundamentals of torque

- Definitions
- Expression in measurement units
- Uses of torque

Measuring torque

- Mechanical deformation
- Stress/Strain
- Detecting Strain
- Strain Gauges
- Wheatstone Bridge
- Readout Units
- Torque Transducers

Calibration of Torque Transducers

- By means of beams and weights
- By means of comparison
 - Principles
 - Calculations
 - DIN 51309
 - Measurement Uncertainty Estimation
 - Polynomial equations: when and where they are used
 - Student calculation exercises
 - Practical torque transducer calibration exercises

Who should attend?

Metrologists and quality practitioners wishing to learn the fundamentals of torque measuring principles, and how to perform calibrations of Torque Transducers. Attendees of this course should preferably have previous experience of metrology work and calibration of Torque Tools.

Course Duration

4 Days

Evaluation

Daily tests and the passing of a final examination are required to successfully complete this course.

The examination will be written approximately two weeks after the completion of the course.

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