Management system standards

Metrology and Instruments

One day to master the measuring equipment your inspections depend on: inventory, calibration, verification, traceability, uncertainty and conformity decisions. Participants read real calibration certificates, set justified intervals and learn what to do when an instrument is found out of tolerance. The work covers the instrument fleet of your site.

Duration : 1 day

Objectives

1. Explain the basic notions: calibration, verification, adjustment, metrological traceability, uncertainty
2. Identify the instruments that influence product conformity and rank them by criticality
3. Read a calibration certificate and decide whether the instrument remains fit for its intended use
4. Define justified calibration and verification intervals
5. Apply the course of action for an out-of-tolerance instrument, including for products already inspected

Programme

Day 1 — morning

• Why metrology: conformity decisions, complaints, standards' requirements on monitoring and measuring resources

• Vocabulary: calibration, verification, adjustment, maximum permissible error, uncertainty

• Metrological traceability and the role of calibration laboratories accredited to ISO/IEC 17025:2017

• Inventory and criticality of your instrument fleet

Day 1 — afternoon (workshop)

• Reading calibration certificates: results, uncertainty, conclusion

• Intervals: selection criteria and review according to history

• Out-of-tolerance instrument: impact analysis on inspected products and decisions

• Workshop: life sheets and calibration plan for five instruments of your site; knowledge test

Teaching methods

• In-session reading and interpretation of your site's calibration certificates

• Exercises on your own instruments when the session is held at your premises

• Simple error and uncertainty calculations in a spreadsheet

• Final test

Assessment and documents

Knowledge test at the end of the day, post-course evaluation at D+1. Numbered certificate, verifiable online, for each participant; calibration plan drafted in the workshop and training report handed to the company.

Bilingual materials for every participant; each classroom course comes with its digital twin on OmniLearn.

Good to know

For a food manufacturing site, the course “Metrology in the Food Industry” dwells on measurements specific to the sector. To assess a measurement system, see “Measurement Systems Analysis (MSA, Gauge R&R)”.

Practical information

Duration	1 day
Audience	Quality and laboratory managers, inspection and maintenance technicians, instrument fleet managers
Prerequisites	No prerequisites
Group size	Groups of 6 to 12 participants, in-company
Format	In-company, face to face on your site
Language	French, Darija or English; bilingual materials
Funding	OFPPT special training contracts (TFP), GIAC, Maroc PME: we prepare the applications with you, at no extra cost.
Programme customisation	Programme adapted to your procedures, your equipment and your audience

Frequently asked questions

Must all instruments be calibrated every year?
No. The interval depends on use, the criticality of the measurement, the stability of the instrument and its history. The course shows how to justify an interval and make it evolve.

What is the difference between calibration and verification?
Calibration establishes the deviation between the instrument and a reference, with its uncertainty. Verification compares that deviation with a tolerance to declare the instrument fit or not for its intended use. The two are often confused in monitoring plans.

What should be done when an instrument is found out of tolerance?
Assess the impact on measurements made since the last valid calibration, decide the fate of the products concerned and keep a record. This case is handled in the workshop on an example from your site.

Who should attend?
Quality and laboratory managers, inspection and maintenance technicians, and the people in charge of managing the instrument fleet.