Training for Industry

MCERTS Level 2 – Team Leader

This course is designed to provide training for the progression from Leve1 to Level 2.

Who should attend

This course is for personnel who are at level 1 and are training to become a level 2 team leader.

Syllabus

Monitoring legislation, standards and methods

Legislation relevant to monitoring, the applicable standards, and the different monitoring techniques for gaseous pollutants. This includes:

- knowledge of appropriate methods for emission monitoring;
- what to do if no standard method is available;
- deviation/modification of methods;
- hierarchy of methods
  - CEN
  - BSI
  - ISO
  - other methods such as ASTM, AFNOR, DIN, USEPA and VDI
- current standards;
- future standards;
- types of sampling systems.

Analytical techniques and limits of detection

Analytical techniques used to support pollutant measurements in the field. This includes:

- definitions and units;
- implications of analytical sensitivity for sample amounts and sampling times;
- limits of detection;
- sample handling;
- liaison with analysis laboratories;
- proficiency-testing schemes.

Abatement systems and their effects on monitoring

Abatement systems used for the control of the principal pollutants from industrial processes and their impact on emission levels. Systems include:

- centrifugal separators (cyclones);
- electrical gas cleaning (for example, electrostatic precipitation);
- fabric filters;
- scrubbers;
- flue gas desulphurisation.

Choice of sampling location and timing

Plant configurations, their impact on monitoring results, and where to carry out sampling. This includes:

- achieving representative sampling;
- positional requirements for particulate matter and gaseous species;
- criteria for locating sample plane;
- surveying the sample plane;
- number of sampling points.

Undertaking a measurement campaign

- Factors to be addressed when undertaking a measurement campaign. These include:
  - determining the objectives of the sampling exercise;
  - deciding on the parameters to be measured;
  - reviewing process parameters;
  - selecting sampling and analysis techniques;
  - batch sampling;
  - continuous direct reading instruments;
  - arranging sample positions, safe access and essential services;
  - liaison with plant operators;
  - safety on site;
  - transport of samples to laboratory;
  - analysis;
  - evaluating results;
  - report writing.

Choice of sampling method, technique and equipment

Monitoring approaches, techniques, published methods, equipment and which factors influence their selection. This includes:

- monitoring approach
  - periodic monitoring methods
  - continuous emission monitoring methods;
- choice of monitoring technique
  - manual
  - instrumental;
- choice of monitoring method and equipment.

Types of process operation and process details

Types of process operation and relevant process details. These include:

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- types of operation
  - continuous (steady state, variable or cyclic)
  - batch process;
- process details
  - timescale of operation
  - awareness of inputs, outputs and mass flows
  - fuel composition
  - stack gas conditions.

Developing site-specific protocols

The candidate must demonstrate knowledge of the requirements to be considered when undertaking a measurement campaign at a specific site. These include:

- site review;
- process knowledge;
- sampling-site details;
- risk assessments;
- regulatory permits;
- method validation;
- site-specific issues;
- quality management.

Processing measurement results, calculation procedures

Procedures used for processing measurement data leading to monitoring results. These include procedures for processing:

- analytical reports;
- report components;
- measurement traceability;
- precision;
- internal variability/repeatability;
- external variability/reproducibility.

Principles of calculating uncertainty

Principles of calculating uncertainty. This includes:

- basic terminology;
- Agency approach to compliance assessment;
- rules for combining uncertainties;
- confidence limits and statistically defined uncertainties;
- tests using certified reference materials;
- repeat measurements using paired instruments and comparison with certified reference method;
- building an uncertainty budget from estimates of component uncertainties;
- assessing deviations from a standard method;
- effect of number and duration of samples on accuracy.

Quality assurance techniques, UKAS, auditing and MCERTS

The candidate must demonstrate knowledge of the systems for quality assurance and quality control in stack-emission monitoring and the implications for data accuracy. These include:

- quality management for emissions monitoring;
- organisation and management;
- quality systems;
- the MCERTS performance standard for organisations;
- staff;
- equipment;
- measurement traceability and calibration;
- sample storage and transport;
- quality audits and reviews;
- horizontal audits;
- spot-check audits;
- system audits;
- vertical audits;
- reports;
- calculations;
- original observations;
- equipment;
- monitoring results file;
- personnel.

Health and safety requirements

Risk-management approach to minimising hazards at work. This includes the use of:

- Risk-assessment and risk-management principles;
- COSHH assessments
- permanent platforms and scaffolding;
- lifting and slinging;
- personnel protective equipment assessments;
- permits to work.