MCERTS - The Environment Agency's Monitoring Certification Scheme

MCERTS is the Environment Agency's Monitoring Certification Scheme for equipment, personnel and organisations. It provides a delivery vehicle for compliance with European Directives which regulate industrial emissions, monitoring data, equipment and personnel. The scheme is built around proven International and European standards to ensure monitoring data is of a high standard. Sira Certification Service (Sira) is the MCERTS certification body and provides certification of equipment, personnel and inspection services. Sira is accredited by the United Kingdom Accreditation Service (UKAS) according to the ISO/IEC 17000 series of conformity assessment standards. UKAS accreditation provides confidence in the impartiality, competence and consistency of the certifications provided by Sira.

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MCERTS promotes public confidence in monitoring data, equipment and personnel and provides a framework for choosing monitoring equipment and services that meet the Environment Agency's specifications.

The Environment Agency

The Environment Agency (EA) was established in 1996 and is responsible for protecting and improving the environment of England. It is a "licensing authority" and issues Environmental Permits to industrial process operators which specify emission limits and monitoring requirements. It is also a "regulatory authority" with power to regulate and prosecute process operators who fail to comply with the requirements of their Environmental Permits.

Background

The EA relies heavily on operator self-monitoring and on the use of continuous monitoring and sampling systems. Operator self-monitoring is well established for industrial processes regulated under the various regulations covering (for example) large combustion plant, waste incineration and waste water treatment.

MCERTS provides confidence in the quality of operator self-monitoring required by the EA. When industrial process operators demonstrate that their monitoring equipment and personnel have been certified according to MCERTS standards, the EA and the public can be confident that the resulting monitoring data is accurate and reliable.

MCERTS was developed to assist industrial process operators in selecting suitable monitoring equipment, personnel and services. Manufacturers of monitoring equipment required an independent, authoritative endorsement of their products, facilitating access to international markets. Providers of monitoring services (particularly laboratories engaged in manual stack emission monitoring) required an endorsement scheme to demonstrate their credibility and adherence to established monitoring methods and standards.

Benefits of the MCERTS scheme

There are numerous benefits to the regulator (EA), the regulated (industrial process operators), equipment manufacturers and to the providers of monitoring services.

Benefits can be summarised as follows:

- MCERTS is an accredited certification scheme recognised Internationally
- MCERTS provides a delivery vehicle for compliance with European Directives
- MCERTS provides assurance to the EA that monitoring equipment, personnel and services are fit for purpose and capable of delivering results of the required quality and reliability
- MCERTS provides confidence to users of monitoring equipment, personnel and services that they are robust and comply with the EA requirements
- MCERTS facilitates the delivery of accurate, reliable monitoring data to the public
- MCERTS provides a framework for the certification of other aspects of compliance monitoring as requirements evolve over time

Scope of the MCERTS scheme

In 1996, when the EA was formed, the initial focus of MCERTS was the performance certification of Continuous Emissions Monitoring Systems (CEMs) for industrial chimney stacks. This was quickly followed by a scheme for the certification of personnel competence for those involved in manual (periodic) stack emission monitoring. In 2003 performance standards for Continuous Water Monitoring Systems were published, followed by the Self Monitoring of Effluent Flow scheme in 2004 and the performance standard for Environmental Data Management Software in 2008.

Product Certification of Continuous Emissions Monitoring Systems

The first MCERTS performance standard for CEMs was published in 1998. The standard includes extractive stack emissions monitoring systems and cross-stack or in situ emissions monitoring systems. Typical species include SO_2, NO_X, CO, O_2, HCl, VOC, TOC, O_2, H_2O and particulates. Instruments monitoring stack temperature, pressure and mass flow are also included. The MCERTS standard for CEMS is now aligned with the European Standard EN15267-3.

The measurement range for each species depends on the intended industrial process application. The certification range is agreed in advance.

Personnel Certification – manual stack-emission monitoring

The scheme was launched in 2000 and provides for the competence certification of personnel involved in manual (periodic) stack emission monitoring. The EA requires that manual stack-emission monitoring on processes it regulates is carried out by accredited laboratories and certified personnel. The scheme provides for the examination and assessment of personnel competence at 3 levels (Trainee, Technician and Team Leader). The scheme ensures that monitoring is carried out safely and in accordance with established methods and procedures.

Product Certification of Continuous Water Monitoring Systems

Performance standards for Continuous Water Monitoring Systems were published in 2003 and include automatic wastewater samplers, on-line analysers (covering a wide range of parameters including pH, turbidity, dissolved oxygen and TOC) and flowmeters.

Self Monitoring of Effluent Flow

The effective environmental protection and management of water bodies receiving effluent discharges requires knowledge of the mass release of pollutants. This is achieved by combining flow measurement data (volume/time) with pollutant concentration (mass/volume). The objective of this scheme is to ensure flow data monitored, recorded and presented to the EA is accurate. Total daily volume of the discharge specified in the Environmental Permit shall be measured with a target uncertainty of better than ±8%

MCERTS Performance Standards for products

MCERTS Performance Standards specify the performance criteria for the specific product category. This includes fixed and portable CEMs, water monitoring equipment, ambient air monitoring systems and software. Performance criteria are evaluated by conducting laboratory tests and a 3 month field trial on a representative process.

Typical performance criteria for an electromagnetic flowmeter are as follows:

- Response time [<30s]
- Warm-up time [to be reported]
- Mean error [±1.5%]
- Repeatability [±1.0%]
- Supply voltage [±0.5%]
- Output impedance [±0.5%]
- Fluid temperature [±0.5%]
- Ambient temperature/humidity [±0.5%]

Structure of the MCERTS scheme

MCERTS is an accredited certification scheme operating in accordance with the ISO/IEC 17000 series of conformity assessment standards.

The Environment Agency has appointed Sira Certification Service as the certification body to operate MCERTS. Sira is independent of all the interested groups, including the product manufacturers, the process operators and the regulator.

Accredited laboratories carry out laboratory and field tests. In some cases, manufacturers can carry out their own testing, under the supervision of Sira Certification Service.

Laboratory and field test results are reviewed by a group of independent experts known as a "Certification Committee" appointed by Sira for each certification project.

The importance of product certification

MCERTS certification requires a product to meet the EA specified performance criteria both in the laboratory and in the field. Furthermore, instrument manufacturers must demonstrate that their manufacturing process is controlled and capable of producing instruments of consistent performance. Once an instrument is certified, the manufacturer must inform Sira of any design or manufacturing changes which might affect the performance of the instrument. Sira will assess the impact of those changes and, if necessary, carry out tests to ensure the modified instrument continues to meet the specified performance criteria.

Design and manufacturing changes take place quite frequently in monitoring equipment. Product certification is critically important to provide assurance to potential users and regulators that instruments manufactured months or years after certification still meet the MCERTS performance standards. Sira ensures that the effects of such changes are assessed by conducting an annual audit of the manufacturers' management system and by conducting recertification of all instruments on a 5-yearly basis.