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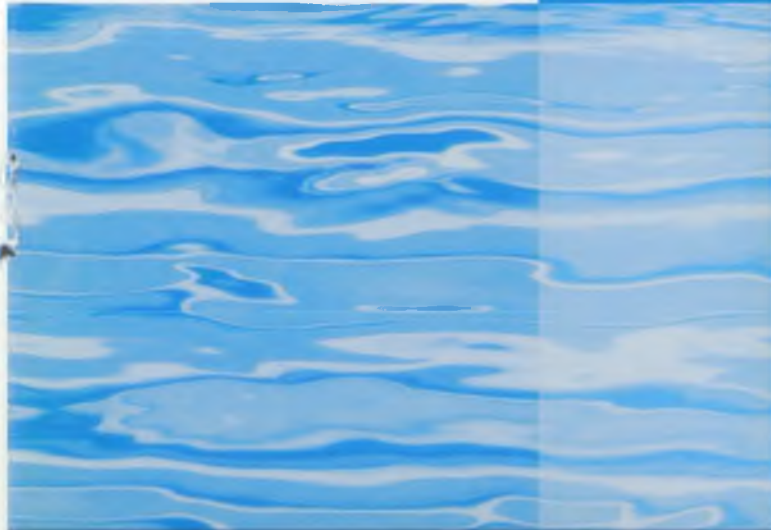
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## MCERTS for Continuous Water Monitoring Equipment:

- automatic samplers
- on-line analysers
- flowmeters

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## Introduction

MCERTS is the Environment Agency's Monitoring Certification Scheme. It provides a framework within which environmental measurements can be made to the Agency's quality requirements. The scheme is built on proven international standards. MCERTS provides for the product certification of equipment, the competency certification of personnel, the accreditation of laboratories and the on-site inspection of monitoring arrangements to a growing family of Agency performance standards.

## Background

The Agency is moving towards increased reliance on self-monitoring by operators using continuous monitoring equipment.<sup>1</sup> This policy is well established under Integrated Pollution Control (IPC), Pollution Prevention and Control (PPC) regulations and the Urban Waste Water Treatment Regulations (UWWTR).

<sup>1</sup> The Agency recognises that the successful site-specific application of continuous monitoring equipment of all types requires arrangements for their effective installation and operation by a managed quality systems approach that demonstrates continuing compliance with performance standards. MCERTS is being developed for the certification of these arrangements for flow monitoring through on-site inspection. Similar extensions of MCERTS for the site specific application of other monitoring equipment is planned.

## Further information

If you have any general questions about MCERTS, please contact:

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For information on MCERTS certification, or if you are interested in making an application, then please contact:

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Further information on the certification process can be found in the SCS publication, *A Guide for Certification of Continuous Emission Monitoring Systems under the Environment Agency's MCERTS Scheme*, from the SCS web site, <http://www.sira.co.uk>.

Both this web site, and the Agency's web site, <http://www.environment-agency.gov.uk> contain more information about MCERTS, and an up-to-date table of certified instruments and services.

## Testing

Testing of wastewater sampling equipment is a laboratory based programme. For UWWTR uses there are specific requirements for sample collection, sample volume and sample integrity taken from E32. For other industrial uses these specific requirements do not have to be complied with but corresponding testing appropriate to the proposed use has to be agreed with the Certification Committee.

Testing for on-line analysers and flowmeters is also normally organised in two parts:

- Laboratory based tests to ensure that analysers and flow meters perform to the required specification.
- Field trials over a twelve week period to ensure that analysers and flowmeters continue to provide reliable data under real operating conditions.

In some cases, (e.g. large open channel flowmeters), part or all of the test programme may be carried out on equipment installed in the field, possibly as part of site acceptance trials, subject to certain conditions being fulfilled. This will be at the discretion of the Certification Committee.

After testing, the test house sends a report to SCS and the applicant.

## Review of test results

The Certification Committee reviews the test report and decides to issue or refuse a certificate. The certificate and accompanying documentation which defines the equipment tested, will list the valid range of certified capabilities and applications. These can be extended beyond the test application by agreement with the Certification Committee. An appeals procedure can be invoked in the event of any disagreement.

MCERTS promotes public confidence in monitoring data, and provides industry with a framework for choosing monitoring equipment and services that meet the Agency's requirements.

MCERTS is a key element of the Agency's Operator Monitoring Assessment (OMA) scheme.

MCERTS standards for continuous water monitoring equipment have been developed with the co-operation of GAMBICA, the UK instrument manufacturers' trade association, to address:

- The Agency's need for a product certification scheme to help industry select suitable monitoring systems, and to promote public confidence in monitoring data.
- The desire for equipment manufacturers to have independent, authoritative endorsement of their products, which would facilitate access to the UK and international markets.

## Benefits

The benefits of MCERTS are that it:

- Is a certification scheme accepted and formally recognised within the UK and internationally.
- Provides assurance to the regulatory authorities that monitoring equipment and services approved to MCERTS standards are fit for purpose and capable of producing results of the required quality and reliability.
- Gives users of the monitoring equipment and services confidence that they are robust and conform to the Agency performance standards.
- Supports the delivery of accurate and reliable data to the public.

## Scope

This extension of MCERTS sets performance standards and conformity testing procedures for continuous water monitoring equipment with different regulatory uses. They are in three parts:

- **Part 1: Automatic wastewater samplers**
- **Part 2: On-line analysers**
- **Part 3: Flowmeters**

Where appropriate, the MCERTS performance standards have been drawn from relevant CEN (European Committee for standardisation) and ISO (International Organisation for standardisation) standards.

## Automatic Sampling Equipment

The MCERTS performance standard and conformity testing procedures for automatic wastewater sampling equipment have been derived from the Agency's earlier E32 specification<sup>2</sup>. The requirements are as in E32 and include:

- Capability for collecting samples on a time or flow proportional basis.
- Provision for adjusting the sample volume.
- Sampling head.
- Sample failure indication.
- Sample line velocity.
- Bias and random variations in sample volume and timing.
- Sample integrity.
- Control of sample temperature to avoid sample degradation during storage.

## Selection of Certification Committee

SCS then appoints a Certification Committee to oversee the technical aspects of certification. The committee consists of a number of experts in the type of equipment under test who are impartial and independent of the supplier.

## Review of application

The Certification Committee reviews the application and decides upon a test programme appropriate to the equipment and its intended applications.

## Quotation for testing

SCS, in conjunction with the applicant, will seek quotes for testing from qualified test houses. Different test houses may be used for different parts of the test programme. The test houses used must be able to demonstrate to SCS that they have the necessary capability and competence to undertake the required testing. Currently, testing is available from WRc, the Agency's National Laboratory Service and Sira Testing and Certification. Other laboratories meeting the MCERTS requirements can offer testing services.

The applicant confirms the test programme and quotation, usually in a meeting with SCS and the test house(s). The applicant places a contract with SCS to cover all testing and certification, after which SCS places contracts with the chosen test house(s).

<sup>2</sup> Environment Agency R&D Technical Report E32, 1997. Specification for automatic sampling equipment for the urban waste water treatment regulations.

## Flowmeters

The MCERTS performance standards and conformity testing procedures cover flowmeters for permanent use in closed pressurised pipes, open channels and partially filled pipes; and with applications to abstraction and effluent discharge monitoring, ultraviolet disinfection and industrial processing controls.

The performance standards for flowmeters include requirements on:

- Security.
- Accuracy.
- Repeatability.
- Ability to compute flow rate and totalised volume.
- Output characteristics.
- Ability to withstand varying environmental conditions.
- Ability to withstand varying fluid conditions.

## Structure of the scheme

MCERTS is an accredited product certification scheme operating under the requirements of the EN45000 series of European standards.

The Agency has appointed Sira Certification Services (SCS) as the Certification Body to operate MCERTS. SCS is independent of all interested parties, including equipment manufacturers and end users, and already operates a Certification Body under the requirements of EN5011. It is accredited by UKAS, the UK Accreditation Service.

## The importance of product certification

Product certification under MCERTS requires the manufacturer of equipment to demonstrate that the manufacturing process is controlled under a quality management system and produces equipment that delivers consistent performance. Once equipment has been certified, the manufacturer has to inform the Certification Body (SCS) of any planned design or manufacturing changes that will affect performance. The Certification Body then assess the proposed changes, and commissions further tests if required, to ensure that the modified equipment still meets the MCERTS performance standards. As a further check the Certification Body also audits manufacturers periodically.

Design and manufacturing changes take place quite frequently in monitoring equipment. Product certification is critically important to track any changes and provide assurance to potential customers and regulators that equipment continues to meet the MCERTS standards. As an additional safeguard, the MCERTS certificate has a lifetime of 5 years after which equipment must be re-submitted for detailed assessment and re-testing where necessary.



## Financing of the Scheme

MCERTS is self-financing, with costs recovered from fees charged to the applicants to the scheme.

The fees cover:

- Application for certification.
- Laboratory and field tests.
- Preparation of test reports.
- Assessment by the Certification Committee.
- Preparation of the MCERTS certificate.
- Promotion and management of the scheme.
- Costs of sustaining accreditation to EN 45011.

## Equipment certification procedure

The MCERTS certification procedure has been designed to be as simple and straightforward as possible. It consists of the following stages:

### Initial application

The equipment supplier submits an application to SCS with clear identification of the equipment and its proposed application. The applicant should also include two sets of drawings, a copy of any relevant control software, evidence and results from testing already carried out which may be taken into account, and evidence of quality control procedures, e.g. ISO 9001.

There has been some clarification in the testing procedures from E32 to ensure that testing is carried out consistently and the results can be compared directly against the performance standards.

## On-line analysers

The MCERTS performance standards apply to analysers intended to be permanently sited and used for on-line monitoring of treated waste water discharges, untreated waste waters and receiving waters. The parameters which are covered are:

- Turbidity.
- pH.
- Ammonia (as total ammoniacal nitrogen).
- Chemical oxygen demand (COD).
- Total organic carbon (TOC).
- Dissolved oxygen.
- Total phosphorus
- Nitrate and total oxidised nitrogen (TON).

The performance standards for analysers include requirements on:

- Accuracy.
- Linearity.
- Repeatability.
- Drift.
- Response time.
- Ability to cope with known interferents.
- Output characteristics.
- Ability to withstand varying environmental conditions.
- Ability to withstand varying fluid conditions.