Getting to Grips with OMA

Author: Angus Fosten

APPLICATION NOTE

REFERENCE DOCUMENTS

The documents below are available from the Environment Agency website: **www.mcerts.net**

Guidance on undertaking an operator monitoring assessment of emission to air and/or water. Environment Agency April 2009

Technical guidance Note (Monitoring) M18, Environment Agency Version 2 April 2009

Monitoring knowledge expected of process managers for OMA v3

Over the past 18 months, the Environment Agency has been rolling out a number of changes relating to environmental legislation. For many sectors of industry, the one change that will not have gone unnoticed has been replacement of the Integrated Pollution Prevention & Control (IPPC) directive by the Environmental Permitting Regulations (EPR). As a result of this change, those companies holding an IPPC permit must now comply with EPR.

In simple terms EPR requires companies to operate best practice to assess the risks that emissions pose to the environment. Having done that, companies must ensure that a suitable level of monitoring is carried out and which is proportional to the complexity of the operations of the installation and the perceived environmental risks. By introducing the EPR, the EA brought together the IPPC and the Waste Management Licensing (WML) directive as a means of streamlining the application and compliance procedures for industry.

One of the central pillars of the EPR, and the IPPC before that, has been the Operator Monitoring Assessment (OMA) programme. Introduced to strengthen the EA's auditing of operators' self-monitoring arrangements, OMA was until May 2009 only applicable to the monitoring of emissions to air from industrial operations. May 2009 marked the introduction of OMA Version 3 for industries discharging wastewater to public sewers, inland water courses and groundwater (Ref: 1).
For companies that have had OMA applied to them for emissions to the atmosphere and which may now be required to address wastewater discharge, preparing for the scheme should not be too difficult. However, for those industries where OMA-3 now becomes applicable, operators will have to take time to familiarise themselves with the scope of OMA-3 and then implement an appropriate self-assessment regime. There is no shortage of guidance from the EA National Monitoring Service (Ref.2) on its website and at local level your EA officer should be contacted for additional advice. "Ensuring that you do well in your OMA audit should not be a significant additional cost for companies", says Paul Wiggins of the EA National Monitoring Service. "Good monitoring practices should ensure that you achieve a good OMA score and could save you money."

Paul Wiggins points out that OMA-3 potentially provides a very good way of helping companies to save money because it identifies where waste treatment and effluent discharge methods may be deficient. Poor management of waste treatment can lead to companies losing product and raw materials that could be recovered and re-used, or possibly operating plant inefficiently. Rather than seeing OMA-3 as purely an additional management cost, it should be seen as a way of controlling operating costs and potentially saving money. The OMA Guidance document could well be a valuable tool when internal audits are being carried out. This is an argument supported by Partech Instruments, which has assisted many industrial companies operating water treatment plants to optimise their resources.

The EA will be using the OMA scheme to assess the quality and reliability of operators' self-monitoring as required by their permit and this includes monitoring that may be contracted out to a suitably qualified organisation. Any monitoring shortfalls and potential areas for improvement will be identified and this will also be of considerable benefit for operators looking to find ways of creating greater levels of plant efficiency. OMA will also enable the EA to target and prioritise its independent monitoring of point of source emissions. Once a report has been produced, a copy is given to the operator.

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There are four sections to OMA-3 and each contains a set of elements against which the EA scores the operator's monitoring arrangements when carrying out an audit. Using OMA check sheets, these scores are recorded and an explanatory report produced for the operator so that any relevant information gathered during the audit can be acted upon where necessary. A score of 1 is deemed as poor, 3 acceptable and 5 being excellent. The scores in each section are added to together and an average produced for each section. The overall OMA score is then calculated as the mean of the sections scores. As Paul Wiggins is keen to point out, there is no overall 'fail' score; the objective is to highlight the deficiencies in specific areas so that the operator can target and prioritize the necessary improvements.

The elements within all four sections are regarded as key components, but there are specific elements that are seen as being fundamental to monitoring where low scores indicate critical flaws in the monitoring arrangements. These specific elements are: sampling facilities, measurement techniques and acceptability of calibration methods. In addition certification of equipment is required in order to obtain good scores. It is in the application of these elements, in addition to having an understanding of the requirements of monitoring and the competent personnel to carry out self-monitoring, where MCERTS is relevant and can ensure an optimum score.

In the case of discharges to water MCERTS provides a standard for organisations undertaking sampling and chemical testing of trade and other effluents. It sets out how it must be done and where it applies to self-monitoring of effluent flow in addition to establishing the minimum standards required of operators and a competency standard for independent inspectors. It also includes the certification of continuous monitoring equipment and covers automatic wastewater samplers, on-line analysers for Turbidity, pH meters, Ammonia, Chemical Oxygen Demand, Total Organic Carbon, and Dissolved Oxygen to name just a few.

OMA Structure

The four sections to OMA Version 3 are:

- Management, training and personnel competence
- Fitness for purpose of monitoring methods
- Maintenance and calibration of monitoring equipment
- Quality assurance of monitoring

Operators need to be fully conversant with them and the many elements which they contain

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MCERTS requires that where the self-monitoring of discharges is performed the task must be carried out by personnel with the appropriate training, qualifications and experience using instruments which have been independently certified in accordance with European and international standards. In other words, the operators must be competent and the equipment must be fit for purpose, and that means holding the appropriate MCERTS certificate.

Monitoring discharges can be carried out periodically by taking samples from the effluent flow and sending them to a laboratory for analysis. Continuous analysis involves taking automatic measurements in situ in the effluent flow or from a sample taken for from the effluent flow to a permanently sited instrument. The EA does say that it prefers the use of continuous monitoring systems, but recognises that the availability of cost-effective equipment for certain applications is limited.

Where continuous monitoring is used, the equipment manufacturer should have the expertise to advise where the best sampling points are located and how the sampler should be installed. If the sampling facilities comply with EA requirements, then a maximum OMA-3 score will be attained. Considerations when selecting the sampling facility in order to get a fully representative sample should include: the location of the sampling point, distance of the instrument from the surface, distance from the side or bottom of the channel, sediment contamination, interference from contaminants and ease of access. Where samples are being monitored at the outfall, then the instruments need to be placed where the turbulence is high to ensure good mixing. If sampling equipment is not located correctly, then the quality of the monitoring may be reduced leading to lower scores in key elements.

Turbidity, or Suspended Solids, monitoring in final effluent is one area that has been highlighted by the EA as of prime importance. This is because it will reveal if the wastewater or effluent treatment plant is actually operating as it should. Employing continuous turbidity monitoring within the treatment process provides a reliable and effective approach to identifying when a problem has occurred, allowing plant operators to take prompt remedial action. It also has the added benefit of indicating the performance of the treatment plant by measuring the presence of undissolved solids prior to discharge. Partech Instruments was the first UK manufacturer to receive MCERTS certification for its Turbi-Tech 2000 Sensor and 7200 Monitor Turbidity and Suspended Solids instruments.

Turbidity is widely used within the food industry on both final effluent and crude effluent. On the crude effluent a turbidity monitoring system can provide a reliable method of on-line measurement to alarm or divert high strength wastewater into a separate holding tank for onward processing. The monitoring of suspended solids or turbidity in wastewater from dairies and dairy food processing plants is a key parameter for assessing the quality of the effluent in respect of meeting consent levels. The results can be used as an aid for minimising waste, as well as indicating if there is any significant product loss through operator error. At the Dairy Crest Davidstow cheese processing plant in Cornwall, two Partech Turbi-Tech 2000 systems are employed in the effluent treatment works, one for treated effluent passed from an aeration tank into a lockertex filter system and the other where flows from both aeration tanks merge at the final point of discharge.

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OMA-3 also lays great emphasis on the monitoring techniques used as these should be specific to the determinands being monitored. Ideally, the technique employed should not be at risk from significant interference from other species nor should the equipment used be sensitive to any other process parameter. Equally important is the use of methods, as these should be relevant to the parameters being measured. A standard list of methods is available from the EA. To get the best possible score, operators should be able to demonstrate that they have fully validated the methods and that they have MCERTS accreditation for the determinands and methods.

For many companies, routine maintenance is an area that has been transformed from being a chore to one seen as being a major contribution to lowering production costs and improving profitability. The aspects of routine calibration and maintenance of continuous monitoring systems cannot be overlooked and OMA-3 incorporates a section made up of six elements. Continuous monitoring systems in wastewater and effluent treatment do require regular calibration checks and inspection, particularly as they are operating in demanding conditions.

Some continuous monitoring systems do not require frequent calibration checks, but operators must prove under OMA-3 that they are adhering to the manufacturer's guidelines if they are to get a good score. Calibration is highlighted as being a fundamental element and all work must be reported and documented so that there is full traceability. Similarly, routine maintenance work should be recorded
Operators must have detailed maintenance and calibration programmes in place and be able to demonstrate that equipment is reliable and available. Under OMA-3, anything less than 95% availability is interpreted as only being relatively reliable.

This is an area where the equipment manufacturer can have a major input by providing in-house calibration facilities and technical support through the provision of fast spare parts availability and breakdown response. Although it may be highly desirable to have a parallel set of fully operational and calibrated equipment on constant standby, this is not always feasible which is why selecting equipment from a manufacturer that can demonstrate immediate technical support and spares availability makes good business sense.

Clearly it is in all operators' interests to obtain the best possible score under OMA-3, so by having suitably qualified personnel working with the most appropriate continuous monitoring systems is the answer. MCERTS water monitoring equipment standards are relatively new, but many leading equipment manufacturers have responded and offer systems that cover the determinands covered by MCERTS. Using equipment that has MCERTS certification is a formal requirement and will ensure the optimum OMA-3 score.

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