

## AN MCERTS INSPECTOR'S VIEW OF THE CURRENT MCERTS PROGRAMME (SELF-MONITORING OF FLOW)



**Having worked as an MCERTS Site Inspector, since the early days of the scheme and having carried out, at my last estimation, around 5000 MCERTS Site inspections across virtually all the Water companies and industry, I am often asked for my views on the MCERTS programme. For those unfamiliar with the MCERTS programme, MCERTS is the Environment Agency's Monitoring Certification Scheme. The scheme applies to businesses that are environmental permit holders who produce potentially harmful emissions to air or discharges to water.**

The aim of the scheme, with regards to discharges to water, is to provide an independent assessment of self-monitoring of effluent flow by qualified MCERTS Inspectors from approved companies, such as Environmental Flow Ltd. There are four other approved MCERTS companies in the UK and together we carry out all of the UK's MCERTS Site Inspections.

Our clients are the Process Operators who the Environment Agency require to have their flow-monitoring arrangements independently assessed and certified as conforming to the requirements set by CSA Group Testing UK Ltd (under the MCERTS Certification Body). These Operators are from all over industry and include water companies, the food industry, the waste industry, manufacturing and much more. Compliance is achieved following the satisfactory completion of both a site inspection and a management system audit. The CSA group then issue the MCERTS Inspection Certificate, which is valid for 5 years. MCERTS Inspectors carry out the site inspections and issue the MCERTS Site Inspection reports.

When on site the most frequent question asked is: "Has it passed?" The next most frequent question, is "Why do sites fail their MCERTS? Before exploring the reasons sites fail their MCERTS inspections, it is important to point out that more sites now pass their MCERTS inspections first time compared with the early days of the scheme. This is despite standards becoming more rigorous in recent years. This points to the success of the scheme, which is now in its 20th year. Compared to the early years of the scheme, most Process Operators are much more aware of the MCERTS standards and requirements and have a greater respect for the scheme. This means that the scheme is working. More Sites are passing their MCERTS and therefore

I feel some personal satisfaction in being part of something that is helping to improve water quality in our rivers and coastal waters. After all, if Process Operators do not know the quantities of effluent they are treating - and releasing into the water course - how are they supposed to effectively treat the effluent?

### The main causes of sites failing their MCERTS

Failures are still relatively common, and they are usually a result of flow measurement systems that are poorly maintained, poorly installed or badly designed.

A poorly maintained flow-measurement system can result in a site failing its MCERTS inspection. A common point of failure, with mag meters, on closed channel systems, is a build-up of detritus on the inside of pipes. This will affect the accuracy of the readings from the flowmeter and will generally cause the flow-meter to over-read, fail its MCERTS and ultimately increase the costs to the Process Operator. Build-up in pipes often causes the MCERTS Inspector a problem in verifying the flowmeter as it will also affect clamp-on meter's - often used in secondary verification - ability to function.



Photo above illustrates detritus build-up inside a magmeter. Clearly, this magmeter was in need of a better cleaning regime.

Similarly, for open channel inspections, detritus in the channel or weir chamber is the biggest cause of failure. Again, the detritus causes flow meters to over-read and it can create turbulence in the channel which again affects the accuracy of flowmeters. Other maintenance issues causing open channel systems to fail their MCERTS include flumes starting to detach from the channel, weirs leaking and in final effluent weir chambers, algal growth and moss. More unusual maintenance issues which I have come across have included chambers which are heavily contaminated with rat faeces and rat poison and visible rats' nest within pipe lagging. The presence of rats alone, would not cause a site to fail its MCERTS, but there have been rare occasions where a secondary verification cannot be carried out due to contamination risks.

Unfortunately, even the most well-maintained sites are doomed to failure if the flow-measurement system has been badly designed in the first place. Examples of poorly designed flow measurement systems include systems where hydraulics downstream of open channel structures cause the flume to drown out. A drowned-out flume means that the flowmeter is unable to read all the flows that are passing. Unfortunately, a relatively common design issue is where a flow measurement system has been designed to the minimum standards for their predicted flow rates, allowing no room for expansion, and then a short period later, the system fails because flow rates have increased and the system can no longer cope with the increased flows. A common example of this is where flow rates increase at Sewage Treatment Works, perhaps due to a new housing development, and then the current system cannot cope and has to be replaced at a huge cost. Furthermore, I often have to fail sites that were initially designed well, but alterations have taken place that interfere with accurate flow measurement. The biggest cause of this is where samplers and wash water pumps have been fitted into weir chambers resulting in an adverse effect on the hydraulics of the flow measurement system.



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This photo shows a completely over-whelmed and drowned out V notch weir as a result of the factory expansion and subsequent increased flow rates, with no consideration for the flow measurement system. It also illustrates an over-cluttered chamber full of sample probes and pumps. As a result, it failed its MCERTS audit and had to be replaced.

Poor installation is another cause for site failures. Over the years I have seen flumes and weirs installed back-to-front, mag meters not installed on straight sections of pipe and not running full and poor electrical connections where the wrong cables have

been used to connect mag-meters. Installing flow measurement systems requires a specialist expertise beyond the capabilities of most Civil Companies. Therefore, when installing new flow measurement kit, it is strongly recommended that Process Operators use only specialist companies who understand both the MCERTS requirements and how flow measurement systems work.



*Photo showing a poorly installed magmeter. Note, the crooked pipework.*

One of the most frustrating things for Process Operators is when their site fails its MCERTS inspection because they have installed a new or replacement flowmeter that is not MCERTS approved. All Flowmeters installed after April 2010 must hold suitable product certification under the MCERTS standard. Exceptions are only made if there is no suitable MCERTS certified product available for the specific installation and the regulator agrees this in writing. Clearly, purchasing non MCERTS approved kit for MCERTS applications can be a very costly mistake, but ultimately, this requirement helps to keep flow measurement standards high by ensuring that only good kit is used. Of course, there are some very good flow-meters on the market that are not MCERTS approved and can be used for other flow applications.

Another question I am often asked on site is - Where do you see the MCERTS scheme heading in the future? The answer I give, in short is that it is going to expand massively. The MCERTS

scheme has an ambitious outlook for the future. The number of locations where MCERTS inspections are required is going to hugely increase with the most significant increase being at Combined Sewage Overflows (CSO's) and sewage pumping stations – the sites responsible for the sewage spills often reported in the news. Currently, most MCERTS flow applications are located on sewage treatment works or factory effluent plants monitoring flow measurement under normal flow conditions. More MCERTS inspections will be required for storm events. These can be located anywhere within the sewage network where there are combined sewer over-flows (CSO's.) The majority of CSO's are already monitored by the Process Operators, but the new standards will improve this monitoring by enforcing a standard. Process Operators are already upgrading their CSO monitoring to MCERTS Standards. Access issues are very much the focus of discussion within MCERTS companies. CSO's are often deep underground, or under roads. Accessing these points, could mean closing a road so that the MCERTS Inspector can gain access to the CSO which could be located deep underground. This will have implications on the training of staff and the safety equipment needed to carry out the inspection. However, MCERTS companies are ultimately in favour of these changes as implementing and enforcing standards can only be a good thing for water quality in the UK.



**James Chandler-Corris - Director of Environmental Flow Ltd - is one of the most experienced MCERTS Site Inspectors in the UK. He has carried out approximately 5000 MCERTS Site inspections across virtually all the Water companies and industry sectors in the UK. He is well-known and respected in the industry with over 25 years' experience in flow measurement.**

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