

Air Quality and Emissions Monitoring: What does best practice look like?

When we turn on the tap, we know that the water coming out should be of a consistently high quality. And we can choose - if we prefer - to drink bottled water instead. This is not so with the air that we breathe. Unlike the water that we drink, we have no guarantee, and in many cases no information, telling us that the air quality in our towns, cities and even rural areas is of an acceptable and safe quality.

Headline grabbing stories earlier this year about the number of UK deaths hastened by air pollution invariably came as a shock to many people who had not fully understood the danger of modern air pollution. However, governmental and industry organisations alike take air quality very seriously and significant improvements have been made over the past two decades.

Air quality monitoring and emissions monitoring equipment becomes more sophisticated, more precise and more accurate every year. However, this alone is not enough to fully address the complex challenges of air pollution. The specification and integration of different pieces of kit and its ongoing service and maintenance also play a crucial role. And the way in which the data is segmented, disseminated and shared with relevant people and organisations – including the general public – is beginning to receive greater attention.

Bearing this in mind, it seems strange that whilst the quality and performance of equipment itself can be verified by industry certification, such as MCERTs, there is no such requirement for associated services. The organisations which package, install and service environmental monitoring equipment are not subject to any defined standards. That's why it is vital that environmental managers – whether from Local Authorities or organisations covered by industrial emissions directives – understand what best practice looks like. This enables them to demand the utmost from their suppliers, and to compare different suppliers more objectively.

When it comes to selecting equipment, the first step towards best practice is ensuring you opt for something that meets all current and horizon legislative requirements. It's not so long since many Local Authorities were stung by the findings of the DEFRA report into EU First Daughter Directive equivalency requirements. Dust analysers which should have been good for years to come simply didn't make the grade. This spotlights a critical procurement issue: with a field as complex as air quality, a purely transactional relationship with suppliers could prevent you from sourcing the best solution for your needs. Instead, it's preferable to establish a consultative relationship with equipment



providers, where you draw on their expertise and experience to ensure a more bespoke – and future-proof – solution that meets your requirements today and for years to come.

Air quality and emissions monitoring equipment should not be treated as a commodity purchase. Systems integrators and service providers ought to work collaboratively with you to develop a tailored solution that has all the required capabilities and qualities. That means sourcing the best combination of equipment from different manufacturers – whether gas analysers, dust monitors or meteorological equipment. It also means finding ways to fit the equipment in the appropriate housing – whether it's for an unobtrusive roadside box, stack monitoring, or mobile monitoring. And it means developing a working system to access the data as and when required, segmenting and presenting it in accessible formats such as graphs and charts. A good provider will proactively challenge your brief and seek to drill down into exactly what you require so that you receive the best possible installation for your needs.

It's not only the kit itself that needs consideration. The whole process, from the moment the brief is given until the final product is delivered, deserves scrutiny – and suppliers should be happy to provide this insight. When it comes to large scale monitoring needs, such as for power stations, this should be regarded as a critical factor. You need absolute confidence that the supplier has the engineering and project management skills to see things through on-time, on-budget and on-brief.

Naturally, the story doesn't end with the successful delivery and installation of the kit. Air quality and emissions monitoring equipment generally run 24/7 and require ongoing service and maintenance to keep performing at an optimum level. Without an adequate servicing strategy – including rapid response capability – there is an increased risk of equipment failure, and of any breakdown taking a long time to be rectified. In many cases this would result in falling foul of environmental laws and regulations. In the case of CEM (continuous emissions monitoring) for industrial plants, a gap in data could result in closure by the Environment Agency, regardless of whether there was an air pollution incident.

Clearly, servicing and maintenance need to be equally as sophisticated as the equipment itself. However, this is an area where many environmental managers can be drawn into false economy. What might seem like a thrifty decision in the short term can mean exposure to expensive pitfalls down the road, not to mention the associated stress, inconvenience and contravention of environmental policy.

When it comes to routine maintenance, environmental managers should be assured that due diligence is being paid. This means the timely replacement of expendables and consumables with new, good quality parts that are up to the task. It is vital to read the small print when awarding a service contract to ensure that you are not left exposed to potential corner-cutting. Ideally the cost of expendable parts should be covered by the fee, so that you don't receive an extra bill.

In addition to ongoing periodic testing, a robust call-out element to the service is essential. Ensure that there are concrete service level agreements written into the contract, and request testimonials from existing customers. Service providers should have a network of



professional engineers who are able to reach your facility within a certain timeframe. Monitoring equipment is highly specialist, often incorporating complex components such as spectrometers. Engineers need expert knowledge and training in order to service it adequately.

Modern technology means that many common glitches – such as the need for recalibration after a filter change – can be dealt with remotely. A good service provider will offer dedicated technical support with the capability to diagnose problems in quick time. In some cases, this will enable issues to be resolved remotely, or if an engineer does need to be deployed, they will have an understanding of the problem before they arrive and come equipped to deal with it.

You need to have confidence in the ongoing performance of equipment and be certain that any emergent problems will be dealt with quickly and efficiently. Cheaper service doesn't necessarily equate to better value, and it could put a fracture in the foundations of your air quality or emissions monitoring.

Ultimately, good monitoring is the cornerstone of good management – and this is particularly true of air quality and emissions monitoring. As legislative requirements surrounding air quality and pollution increasingly go hand-in-hand with public demand for accessible air quality information, a robust strategy is essential. The best equipment and service providers understand this. As well as ensuring that your monitoring makes the grade, they will go the extra mile to provide intuitive graphs and tables making the data accessible to anyone who's interested.

Case Study

ET devises mobile monitoring units for Air Quality Cell

The Environment Agency-chaired Air Quality Cell, set up to provide a multi-agency response to major air quality incidents, is using sophisticated mobile units from Enviro Technology as a core strategy component.

Enviro Technology was selected for the multi-million pound project after a competitive pitch involving a complex brief. The air quality monitoring specialist is providing two bespoke, well-equipped vehicles that use groundbreaking technologies and meet stringent requirements, such as weight and power restrictions.



"In the event of a major incident the Air Quality Cell will be convened, and rapid response measures including vehicle deployment, are implemented," explains Gillian Hickey from the Environment Agency. "The mobile stations need to be in situ, gathering data and samples for analysis, within hours of the initial alert. We chose to work with Enviro Technology as the team's response to our challenging brief demonstrated intelligence and innovation."

Enviro Technology has also secured a three year service and maintenance contract for the mobile monitoring stations. A dedicated engineer has been recruited to accompany the vehicles, provide onsite technical support and ensure all equipment is functioning at its optimum level for the duration of an incident.

Pollutants that can be detected and measured by equipment on the mobile stations include SO₂, Nox, NH₃, CO, PM10 and PM2.5. The vehicles also carry their own generators and are fitted with pneumatic stabilisers. In addition, a 360° weather-proof webcam and net mast enable Agency staff to keep in touch with remote colleagues and share real-time incident information.

"This is probably the most exacting brief we have ever had to work with," says Duncan Mounsor, Sales & Marketing Director at Enviro Technology. "But the result is a pair of truly state-of-the-art mobile air quality monitoring stations."

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