Integration: The Future of Emissions Monitoring is Here Now

As local authorities and the private sector seek solutions to society's waste disposal needs, the development, construction and operation of waste to energy and biomass incineration plants is increasing. To help minimise risk and increase overall operational efficiency of these plants, operators should be examining the benefits of an integrated process control, gas emissions monitoring and reporting platform.

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Bob Lane, from Siemens Industry Automation & Drive Technologies, believes waste to energy and biomass plant owners and operators should be considering a more 'joined-up' strategy to emissions monitoring which, as well as operational efficiency benefits, will aid compliance with mounting legislation such as the new Industry Emissions Directive. Here, he discusses a new and unique technology approach and how it can work for plants within the sector, as well as addressing how operators should tackle the procurement of monitoring equipment to ensure targets are met.

The appetite for waste to energy and biomass incineration plants is increasing, as solutions to society's waste disposal needs can no longer rely upon landfill, as previous generations were able to. At any one time there can be upwards of 200 such projects at various stages of planning, construction or commission across the UK – and it is a number set to increase as waste disposal issues continue to dominate future environmental and energy concerns.

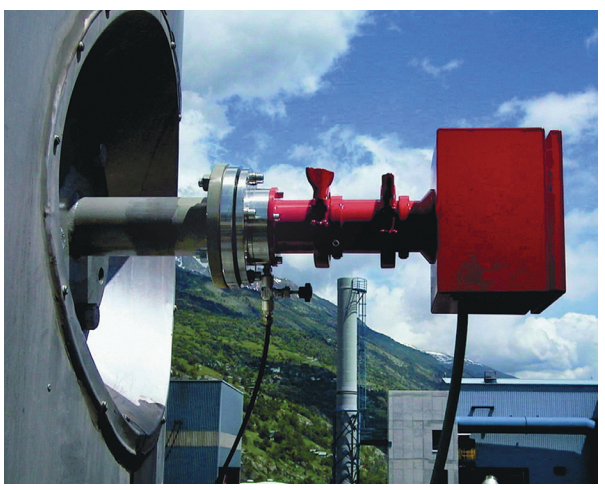
As we know, the owner/operators of such proposed sites are required to comply with a number of tough legislative requirements to fulfil their legal responsibilities – and this places great onus upon the control, pollutant monitoring and reporting systems employed at the plants to satisfy bodies charged with overseeing the operational and environmental impact of the sector.

Any business generating power from fossil fuels or the incineration of waste is mandated to monitor the gas emissions being produced, as well as prove to organisations, such as the Environment Agency, that emissions do not exceed the accepted thresholds set down in law. They also have to consider the need for plants to meet the specific requirements (dependent on the process) of three significant pieces of existing pan-European legislation (to be replaced in 2013 by the Industrial Emissions Directive – 2010/75/EU) - the Waste Incineration Directive, the Large Combustion Plant Directive and the Integrated Pollution Prevention and Control (IPPC) Directive. It is with these overarching levels of legal responsibility in mind that all plant operators need to ensure they are meeting both their operational and legal objectives on a continual basis, or they will simply not be allowed to go about their daily business.

However, in order to further support this need to satisfy their legal masters, as well as seek improvements in their operational efficiency capabilities, I believe plant owners/operators need to start considering a more 'joined-up' approach to their key systems. Such a strategy will not only simplify the existing disparate and separate structure of control, gas emissions monitoring and reporting procedures - but can also, as a result of such decisions, drive benefits in key areas such as minimising business risk of non-compliance in emissions and reporting objectives, as well as supporting streamlined and predictive plant maintenance programmes.

The answer lies in the integration of available technology within a single platform. The traditional structure adopted by the industry to date has been to utilise three separate systems in an approach to plant control, gas emissions monitoring and legislative reporting. First, plant wide distributed process control systems oversee the operation of the plant. Second, the Continuous Emissions Monitoring system (CEMS) based upon gas analyser technology measures the polluting gases produced by the plant and is configured to satisfy specific European legislation according to the types of gases produced. Finally, the reporting system endeavours to take the information from the CEMS system and turn operational data into meaningful reporting collateral for bodies such as the Environment Agency. Three different systems – each with their own software platforms, operational issues and maintenance requirements – and all without the ability to communicate with each other in a collective, holistic manner.

It is true that such a structure has been previously adopted due to the lack of a single platform to accommodate the disparate nature of each individual system. However, advances in technology development are seeing this matter addressed to a point where it



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is now possible for a single hardware platform to run an overall process control operation linked to CEMS which is linked to the final reporting requirements.

Integrated systems

The benefits of such an approach are clear. Operators will have a single system instead of three, which in turn offers increased operational efficiency performance characteristics through easier maintenance strategies and a greater visibility for operators across the plant operations. This, by association, delivers real and tangible business risk reduction in the key areas of emissions monitoring and reporting, so that all legislative obligations can be met.

As everyone in the industry acknowledges, all owners/operators of waste to energy and biomass plants already have to employ MCERTS compliant gas analyser technology as part of the monitoring process. MCERTS approved reporting, while not yet compulsory, could well become so in the future. The inherent advantage of a single hardware and software system that, as well as providing overall plant control, can also deliver both monitoring and reporting functionality to meet current and future MCERTS requirements, is one that should be seriously considered.

Waste to energy and biomass plants are set to stay as authorities confront the ongoing need for waste disposal through the most effective and environmentally friendly methods possible. And with incineration comes real responsibility in terms of effective pollutant gas monitoring and reporting of activities – activities that have to be conducted under a searching legislative spotlight.

The ability through an integrated technology solution to bind together the disparate systems that currently co-exist on site offers a real opportunity for plant designers and operators to minimise business risk - safe in the knowledge that a single platform can underpin and integrate plant control, gas emissions monitoring and MCERTS reporting functions seamlessly.

Siemens solution – first of its kind

As part of Siemens' drive to offer industry solutions to emissions monitoring, we have spent two years researching and developing our answer, the CEM System Manager (CSM). It is the first integrated process control and emissions monitoring solution of its kind, which combines the three systems - control, exhaust gas emissions monitoring and reporting - to ensure ultimate efficiency. This single, integrated platform is currently undergoing MCERTS accreditation.

In addition to the CEM System Manager, we have further enhanced our offering by securing a contract with Gasmet Technologies Oy to incorporate its FTIR (Fourier Transform Infra Red) gas analyser as part of the CEM system solutions package. FTIR is a dominant technology and one that suits many organisations. Being able to provide a holistic answer to emissions monitoring will derive great benefit across many sectors.

As there are a number of different answers to emissions monitoring on the market, such as different types of analyser, single, twin or integrated solutions, coupled with the emergence of new technologies, it is important plants source the right advice before committing to a new purchase. This will ensure the right solution is selected – and operational efficiency is achieved. By operational efficiency, I mean low levels of maintenance and therefore reduced plant downtime, accuracy and efficiency in

terms of environmental reporting. Because legislative requirements are ever changing, it is critical equipment can keep up with this and make the process more efficient for its operator and, vitally, ensure compliance.

In an economic environment where operators face ongoing challenges to meet targets, increasing operational efficiency and reducing business risk is essential to success. Integrating emissions monitoring therefore, provides plants with an end-to-end solution. Integration is at the heart of our holistic approach to helping industry drive value and efficiency forward and the waste to energy sector is no exception to this.

For any further information or literature requests please contact 0845 7705070 / www.siemens.co.uk/automation.