Are Your Facility's CEMS in Compliance with the EN standards?

For continuous measurements of stack emissions the EN 14181 standard specifies that not only analyzers, but complete automated measuring systems (AMS) need to be approved. EN 15267 provides the unified scheme for testing and approving AMS in Europe. Under EN 14181 and the associated EN 15267 an AMS cannot be installed until it has been proven to be suitable for the intended application. The flexibility of individual system modifications is therefore very limited. Due to the certification of different system components the modular AMS, Set CEM CERT is allowing owners to choose between various components suppliers and thus keeping full compliance with both EN 15267 and EN 14181.

> *"Many industrial process operators have to continuously monitor the emissions from their chimney stacks. The Industrial Emissions Directive (IED) 2010/75/EC provides in Europe the legal framework for the plant permit conditions including emission limit values (ELVs), which must be based on the Best Available Techniques (BAT)."*

ULTRAMAT 23 multi component NDIR analyzer

Tightening control and the need for standards

Many industrial process operators have to continuously monitor the emissions from their chimney stacks. The Industrial Emissions Directive (IED) 2010/75/EC provides in Europe the legal framework for the plant permit conditions including emission limit values (ELVs), which must be based on the Best Available Techniques (BAT). The IED covers the Large Combustion Plants (2001/80/EC), where it is specified that sulphur dioxide (SO_2), oxides of nitrogen (NO_x), carbon monoxide (CO) and particulate matter (PM) must be measured. The Large Combustion Plant Directive (LCPD) specifies a requirement for accuracy and precision as 95% confidence intervals, expressed as a percentage of the emission limit values (ELVs). The confidence intervals vary component specific from 10% for carbon monoxide up to 30% for particulate matters. This important statistic value is also called the relative total expanded uncertainty. The EN 15267 standard (part 3) is tightening the maximum permissible uncertainty by 25%. Consequently for carbon monoxide the relative expanded uncertainty is dropping from 10% to 7.5% in order to meet the EN15267-3 requirements. For the first time the EN15267 certification scheme offers the plant operator a standardized method to compare the performance of different AMS suppliers.

CEMS and AMS

A continuous emission monitoring system (CEMS) is the total equipment necessary for the continuous measurement of gases or particulate matters using continuous analyzers and a data acquisition system (DAS) to report results of the applicable emission standard. Hence a cold extractive CEMS includes mainly three basic components: the sampling and conditioning system, the continuous gas analyzers and the data acquisition system (DAS). In Europe, the acronym AMS (automated measuring system) is used for the sampling and analyzing of stack gas, but does not comprise the recording of data.

Author/Contact Details:
Rudi Spinner
Product Manager Standard Solutions
Process Automation,Siemens AG

Contact:
Shawn Pullman
Tel: 08458 507600
Email: Sales.gbi.industry@siemens.com
Web: www.siemens.com

Set CEM CERT – a new modular certified system from Siemens

A Modular Approach for Emissions Monitoring

Apart from the actual measuring device the EN15267 standard considers the additional components of an AMS. Components like sampling probe, sample gas line, flow meters and regulator, gas pump, cooler, NO_x converter are included in the testing and approval process. A certification according to EN 15267 is only granted for complete systems from the sampling device to the analogue output. Only the parts listed in the test certificate may be used at new installations, otherwise the suitability test may be deemed invalid! Selecting such system components implies a long-term decision for the plant operator. In order to keep the total cost of ownership low and system component flexibility high, Siemens decided to include to each major system component two suppliers in the certification test. This modular concept makes Set CEM CERT a smart choice to help plant owners to manage the business in today's tough regulatory environment.

The flexible and approved Set CEM CERT solution ensures quick and easy field installation in a compact design using up to two Siemens ULTRAMAT 23 or SIPROCESS UV600 multi-component gas analyzers according to the specification requirements. These powerful analyzers form a CEMS approach that offers tremendous cost savings. There is also an outdoor version available which does not require a protection shelter. A GRP (glass-fibre reinforced polyester) type enclosure is ideal for mounting Set CEM CERT directly in the field.

Versatile Analyzers

According to the Industrial Emissions Directive (IED) 2010/75/EC the continuous measurements of stack pollutants should include the measurement of oxygen in order to reference defined oxygen values. For example for coal fired power plants the reference oxygen value is defined with 6 Vol-%. This continuous measurement is called a peripheral measurement as it does not have direct performance characteristics assigned to it. Nevertheless this measurement must be certified as well according to EN15267, where instead of the emission limit value (ELV) the end of measuring range is used as calculation base. Therefore the ULTRAMAT 23 multi component NDIR analyzer (non dispersive infra-red) is additionally equipped with an oxygen measuring cell. Consequently, following the modular concept both an electrochemical and a paramagnetic measurement solution has been certified.

The nitrogen oxides emission limit values (ELVs) for gas fired power plants at a limit of 35 mg/m3 are at a low level. With Set CEM CERT such low ELVs can be realized, when choosing the SIPROCESS UV600 NDUV analyzer (non dispersive ultra-violet). The UV measurement

Siemens SIPROCESS UV600 NDUV analyzer

principle is generally not as cross sensitive towards other gases such as CO_2 and H_2O as these do not absorb well in the UV range. This is why the UV measuring principle is very useful for the analysis of gases in low concentrations of NO_x.

Read, Print, Share or **Comment** on this Article at:
Envirotech-Online.com/Articles