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Directorate C - Air and Chemicals
ENV.C.4 - Industrial emissions

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Standardisation mandate to CEN for the creation of a European standard on volumetric flow from stationary sources in the field of air emissions

I Motivation

Whereas pollutants in compliance checking of permits are measured usually as concentrations = mass/volumes (e.g. in mg/m^3) the data in emission inventories is expressed in mass/time units (e.g. kg/year). To calculate the mass emissions/year the measured concentration values have to be multiplied with the (annual) volumetric flow values. The result of the mass emissions/year depends therefore on the accuracy of both concentration and flow measurements. While standardised methods for concentration measurements widely exist a standard for volumetric flow measurements does not exist on European level, despite the fact that errors in flow measurements could amount up to 20-30% of the total result. Since emission inventories with their mass emission/time values are more and more established the need for a standardisation of volumetric flow measurement rises.

The following gives a short overview on recent legislation where time related preferably annual mass emissions are used:

<u>European PRTR</u>

The European Pollutant Release and Transfer Register implements the UN-ECE PRTR Protocol and is mainly a register of industrial releases to air, water and land and of off-site transfers of waste and waste water. It is the successor of the existing European Pollutant Emission Register (EPER) and its first reporting year will be 2007.

Under the REGULATION (EC) No 166/2006 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 18 January 2006 concerning the establishment of a European Pollutant Release and Transfer Register it is stated in recital 7 that:

“The objectives and goals pursued by a European PRTR can only be achieved if data are reliable and comparable. An adequate harmonisation of the data collection and transfer system is therefore needed to ensure the quality and comparability of data."

It is further emphasized in recital 12 that:

"Data reported by the Member States should be of high quality in particular as regards their completeness, consistency and credibility. It is of great importance to coordinate future efforts of both operators and Member States to improve the quality of the reported data. The Commission will therefore initiate work, together with the Member States, on quality assurance."

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To establish the requested credibility (and comparability) of the mass emissions, standardised and harmonized methods of measurement of both concentration of pollutants and volumetric flow should be available for the Member States.

Emission Trading Scheme

A successful EU wide CO_2 emission trading scheme has been established based on Directive 2003/87/EC. The scheme is based on trading of mass emissions/year.

There is the intention to extend the scheme to cover other greenhouse gases including methane and N_2O. In addition there is great number of Member States interest in trading mechanisms as a means of reducing NO_x and mercury emissions. These substances will be measured as concentrations and an accurate measurement of the volumetric flow is needed to convert these values to mass emissions.

International agreements

A number of UN ECE and UN FCCC protocols require Parties to report annual mass emissions to air, on a regular basis, using harmonised systems. These emission inventories are compiled using on one side emission measurements and/or on the other side emission factors which are, in many cases, based on concentration measurements of pollutants. For both cases the volumetric flow is required at certain steps to calculate the mass emissions. Countries are encouraged by those international agreements to establish the uncertainty of the emission factors used and reduce these to a minimum. A standardised volumetric flow measurement, with known performance characteristics, would be a major step to improve the quality of inventories.

Another item concerning harmonisation of standards should be taken into account:

The Directives 2000/76/EC of the European Parliament and of the Council of 4 December 2000 on the incineration of waste and 2001/80/EC of the European Parliament and of the Council of 23 October 2001 on the limitation of emissions of certain pollutants into the air from large combustion plants both contain specific demands for measurement of concentrations of specific pollutants.

These specific pollutants have partly to be measured discontinuously by a Standard Reference Method (SRM), as prescribed in a CEN Standard, and partly to be monitored continuously by an Automated Measurement System (AMS), also prescribed in a CEN Standard.

The AMS have to be calibrated with the corresponding "discontinuous" CEN SRM, following a methodology standardised in a third CEN Standard.

All SRM standards refer to the measurement of volumetric flow, as an integral part of the standard, but none of these SRMs under CEN have performance characteristics (minimum demands) for the volumetric flow measurement, or a methodology to evaluate and estimate the contribution to the uncertainty budget.

Therefore a Standard Reference Method for flow measurements would in this respect, complete all the specific pollutant standard reference methods, by standardising that part of the reference method.

Summary: The creation of a European standard on volumetric flow from stationary sources in the field of air emissions would enable the harmonised quality of measurement and reporting of mass emissions into the atmosphere from stationary sources required by European legislation and international agreements and would improve the comparability of annual mass emission reporting. Further to this the standard would also complete existing Standard Reference Methods for specific pollutants, where reference is made to volumetric flow measurements.

II Description of the mandated work

1. The Commission entrusts CEN with the following work:

Establishing of a European standard for a measuring method for volumetric flow for stationary sources in the field of air emissions.
The validation of the method will include validation in laboratory (wind tunnel) and in field (incineration plant, use of automated measuring systems (AMS)).

2. The standard will cover the following subjects:

- Scope, normative references
- Terms and definitions, symbols and abbreviations
- Principle of the measurement procedure
- Device, materials and standards
- Measurement procedure
- Calculation of the results
- Method validation and quality control
- Quality control requirements for the measurement
- Quality assurance criteria
- Performance characteristics/lower determination limits
- Interferences
- Annexes as appropriate

3. The Commission recommends CEN to take account, as much as possible and as appropriate, of EPA 40 CFR Part 60, 72 and 75 as well as ISO 10780 (SRM for flow rate) and ISO14164 (AMS for flow rate).

III Bodies to be associated

As appropriate, CEN will invite the representative organisations of consumers interests (ANEC), environmental protection (ECOS), workers (ETUI-REHS) and small and medium-size enterprises (NORMAPME) to take part in the elaboration of the standard.

IV Execution of the mandate

1. CEN will present the draft standard (EN) to the Commission before 1 December 2010.

2. The European Standard (EN) will be adopted before 1 July 2012. At this date, the three linguistic versions (DE, EN, FR) will be available as well as the correct titles in other Community languages.

3. Before 1 December 2012, the standard (EN) will be transposed into national standards and all conflicting national standards of the Member States will be withdrawn.

4. CEN will present a report, at least once a year, on the progress of work.

5. The standstill period referred to in Article 7 of Directive 98/34/EC of 22 June 1998 shall commence when the CEN accepts this standardisation mandate[1].

[1] OJ L 204, 21.7.1998, p.37, as amended by Directive 98/48/EC (OJ L 217, 5.8.1998, p.18)