

# Certification of Automated Measuring Systems - New Regulations and New Opportunities

**TÜV Rheinland**  
Energy GmbH

**Guido Baum**

*Type Approval and IED Plants  
Am Grauen Stein  
D-51105 Köln*

*Tel.: +49 (0)221 806-5463  
Fax.: +49 (0)221 806-1349  
Email: [guido.baum@de.tuv.com](mailto:guido.baum@de.tuv.com)*

*Lisbon, 18.05.2016*

# Content

- **Certification of automated Measuring Systems (AMS) - QAL1**
  - Testing, Certification, Observation – The EN 15267 Standard
- **The new EN 15267 part 4**
- **European Standard for the certification of data evaluation and handling systems (DAHS)**

# Quality assurance levels of EN 14181

QAL1 – Performance test and announcement

**Measuring equipment must be certified according to EN 15267!**

QAL2 – Installation and calibration (§29b BImSchG in Germany)

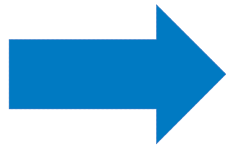
QAL3 – Continuous drift tests (plant operator)

AST - Annual Surveillance Test (§29b BImSchG in Germany)

# Context and legal background

Requirement for the use of type approved measuring systems for the observation of official emission limit values in DIN EN 14181

First Europe-wide requirement for an type approval for automated measuring systems (AMS) in QAL1 of the DIN EN 14181 (before only national regulations in some European countries)



**New: Update DIN EN 14181 valid since February 2015 (Germany)**

**Since February 2015 only EN 15267 / QAL1 certified AMS are accepted!**

# QAL1, EN 15267

## Scope

- **DIN EN 15267-1 July 2009**  
General Principle
- **DIN EN 15267-2 July 2009**  
Initial assessment of the AMS manufacturer's quality management system and post certification surveillance for the manufacturing process
- **DIN EN 15267-3 March 2008**  
Performance criteria and test procedures for automated measuring systems for monitoring emissions from stationary sources
- **EN 15267-4 → actual: new standard in progress (WG 16)**

# New EN 15267 Part 4

## Status CEN/TC 264 Working Group 16

A new standard for the certification of CEMS for mobile use (portable AMS or P-AMS) is in a good progress and will be submitted to the formal voting shortly

### Title of the new EN 15267:

**Air quality— Certification of automated measuring systems — Part 4:  
Performance criteria and test procedures for automated measuring  
systems for periodic measurements of emissions from stationary sources**

### **Definition portable automated measuring system (P-AMS):**

Automated measuring system which is in a condition or application to be moved from one to another measurement site to obtain measurement results for a short period

# EN 15267-4 - Scope

- European Standard specifies the general performance criteria and test procedures for portable automated measuring systems (P-AMS) used for periodic measurements of stationary source emissions,
- Applies to the performance testing of P-AMS based on measurement techniques specified by the standard reference method (SRM) or an alternative method (AM),
- Performance testing is based on the general performance criteria and test procedures specified in EN 15267-4 and on the specific requirements specified for the SRM or AM. (including testing of the applicability and correct implementation of the QA/QC procedures specified for the SRM or AM).

# EN 15267-4 - Relationship to EN 15267-3

- New European Standard is based on EN 15267-3. Several requirements of the European Standard are identical to those of EN 15267-3,
- Deviations from EN 15267-3 only where the portable use requires different or additional requirements,
- Standard allows a combined testing where an AMS is designed for stationary and portable use,
- Standard allows a reduced performance testing of P-AMS, which have been already certified according to EN 15267-3 for stationary use.



# EN 15267-4 - Differences Laboratory Test Procedure 1

Several laboratory test points are comparable to the EN 15267-3 certification. All test shall be performed with **two** identical P-AMS. Some test points were modified with respect of the mobile use:

Some examples of laboratory test points:

- **Degrees of protection provided by enclosures:** according to EN 60529
- **Response time:** actually *tests at 5°C, 20°C and 40°C are required*, wet test gas > 15 Vol.-% H<sub>2</sub>O
- **Lack of fit:** Performance of this test at the beginning of the lab test as well as before and after the vibration test
- **Short-term zero and span drift:** Based on an 8 h interval

# EN 15267-4 - Differences Laboratory Test Procedure 2

Some examples of laboratory test points:

- **Warm-up time after transport and influence of ambient temperature:** The setting into operation and the influence of a slow change in ambient temperature shall be tested. The deviations of the P-AMS readings at the zero and span point shall not exceed the performance criterion (e.g. 5 % of range for gas analysers)
- **Influence of vibration:** for the complete AMS
- **Effects related to storage and transportation:** manufacturer shall describe transportation requirements and possible effects related to transportation and he shall specify the maximum storage temperature and humidity.
- **Cross-sensitivity: list of** interfering substances similar to EN 15267-part 3

# EN 15267-4 - Field Test Procedure 1

- **No continuous three month field test required!**
  - Interesting for portable analysers which allow only shorter measuring times
  - Interesting for portable analysers with shorter maintenance intervals e.g. for service
- Field test shall be performed with **two** identical P-AMS under repeatability conditions
- field test shall be carried out at least **at five different industrial processes** representative of the intended application of the P-AMS **or at a suitable test bench** which covers all relevant influences present in the field, with **at least six measurements** over the required averaging period (e.g. 10 min, 30 min or 1 h) for each process / at each measuring day
- Each measuring campaign shall cover separate transportation of the P-AMS to the plant, setting-up the PAMS, performance of the measurements, disassembly of the P-AMS and transportation back to the laboratory. The measurement period of each measuring campaign shall cover one full measuring day of at least 8 h.

# EN 15267-4 - Field Test Procedure 2

## Performance criteria:

- **Response time:** shall be performed at the beginning of each measuring day
- **Short-term zero / span drift in 8 h:** zero and span checks at the beginning / end of the measuring day
- **Reproducibility, Rf:** At least 30 paired measurements, determination during field tests from simultaneous measurements by means of two identical P-AMS at the same measurement point (paired measurements)
- **Equivalence with the SRM:** equivalence of an AM with the SRM shall be demonstrated by application of **prEN 14793** and use of the results obtained from the parallel measurements with the SRM in the field test
- **Measurement uncertainty:** Total uncertainty of the P-AMS determined from the tests according this standard shall meet the maximum permissible uncertainty specified in applicable SRM

# Status European Standard for Certification of DAHS

**DAHS = Data Acquisition and Handling System**

**Actual:**

Since several years, WG9 is developing an uniform Europe-wide Standard for data acquisition and handling systems

Several European member states take place in this working group

The different national interests makes it difficult to find an common acceptance for the content of this standard.

Actual the standard is splitted in the following three parts:

# Actual: Three Parts of the European DAHS Standard 1

## ▪ Part 1

Stationary source Emissions — Data handling systems — Part 1:

### **Reporting data obtained from automated measuring systems**

- minimum requirements for the handling of data provided by automated measuring systems (AMS),
- minimum requirements for the reporting of data,

## ▪ Part 2

Stationary source Emissions — Data handling systems — Part 2:

### **Specification of data handling and acquisition systems**

- minimum requirements for data acquisition and handling systems (DAHS), which receive raw data from AMS and convert, average, store and report data as required by legislation,
- minimum requirements for the reporting of data

# Actual: Three Parts of the European DAHS Standard 2

- **Part 3**

Stationary source Emissions — Data handling systems — Part 3:

**Specification of data handling and acquisition system testing and certification**

– test procedures to be applied in the performance testing of DAHS

# Actual Situation

**Actual no of these three parts is published or valid in Europe.**

Some European countries want to start with an uniform DAHS system and take the drafts into account.

**Problem:** E.g. in Germany, the draft or a test in accordance to a draft will not be accepted by the certification committee. Actually in Germany an update of the BEP (Uniform Praxis for the observation of Emissions) is in progress

→ Update of the national minimum requirements in Germany

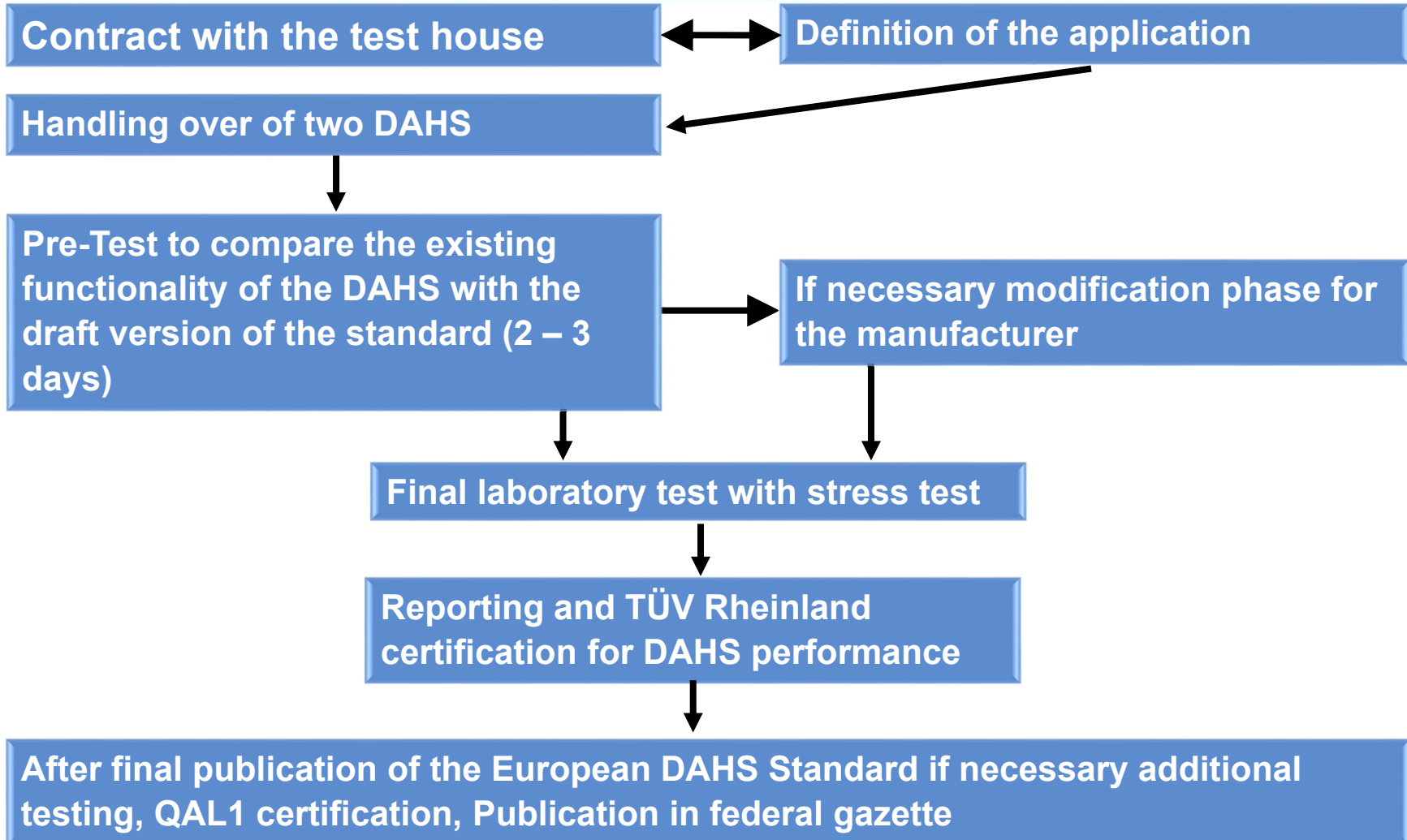
**At the moment certifications are only possible in line with the existing national minimum requirements for DAHS**



# TÜV Rheinland approach for DAHS Certification

- Situation: Some European countries without existing national requirements for DAHS are looking for certified DAHS systems
- TÜV Rheinland approach for the certification of DAHS:
  - Definition of a test scope and minimum requirements based on the actual European and German DAHS requirements
  - Implementation of the test procedure together with the manufacturer of the DAHS System
  - If test procedure could be finished successful, manufacturer will get **TÜV Rheinland test report** for his system
  - After final guideline is published, test report with existing test data and new test data (depending on the modifications of the standard) will be reached in to the national certification committee for QAL1 certification and publication in federal gazette

# TÜV Rheinland Certification of DAHS



A world map with a yellowish-gold color scheme. Numerous blue pushpin icons are scattered across the map, indicating various global locations. The text "Thank you for your attention" is overlaid in a large, bold, blue font across the center of the map.

**Thank you for your  
attention**