

QUALITY ASSURANCE & CONTROL FOR CEMS EUROPEAN SYSTEM

ROLAND ZEPECK

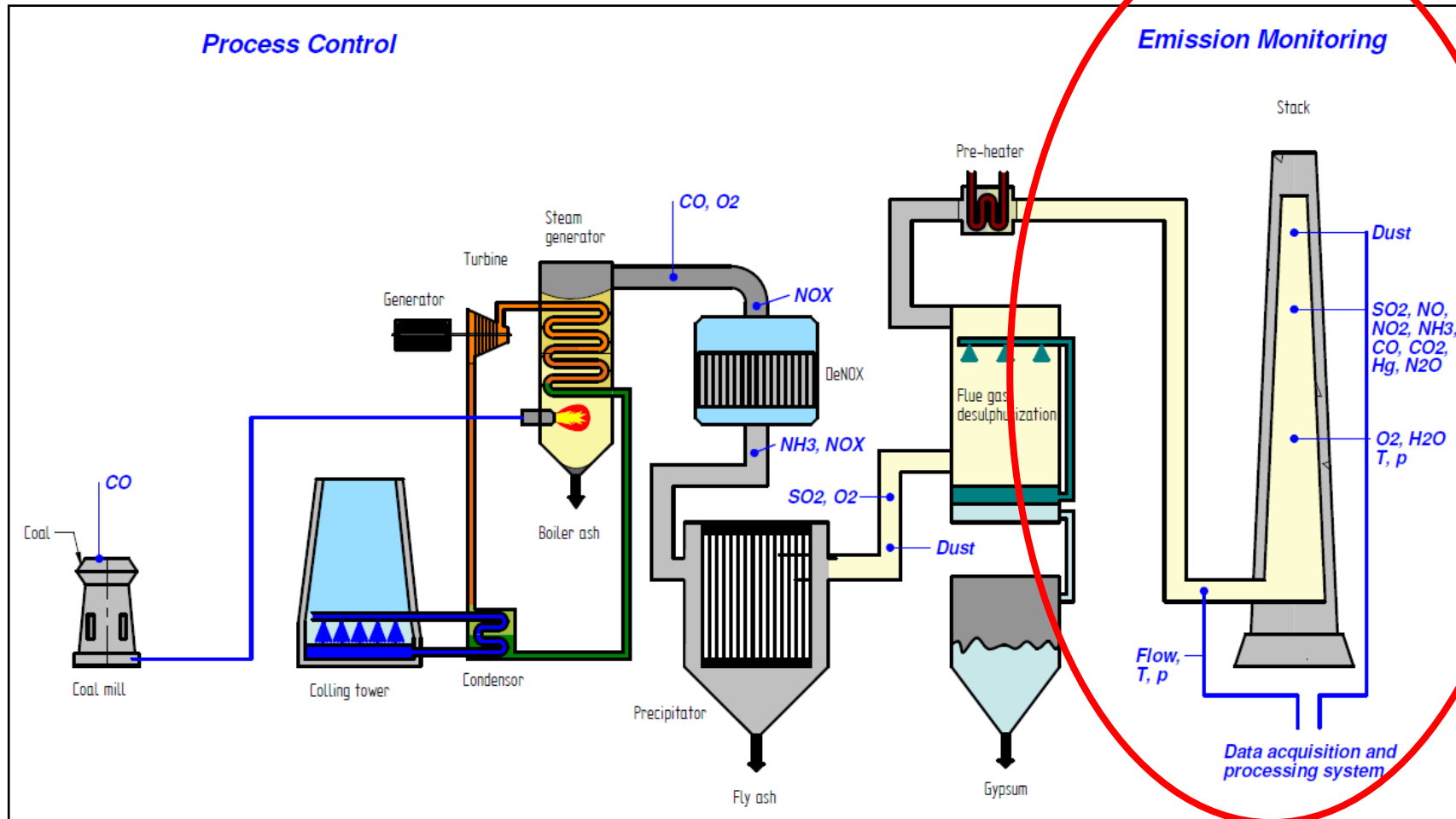
BHUBANESWAR, JULY 11TH – 13TH, 2022



INTERNATIONAL CENTRE FOR
SUSTAINABLE CARBON



WHERE AND WHAT DO WE NEED TO MEASURE ?

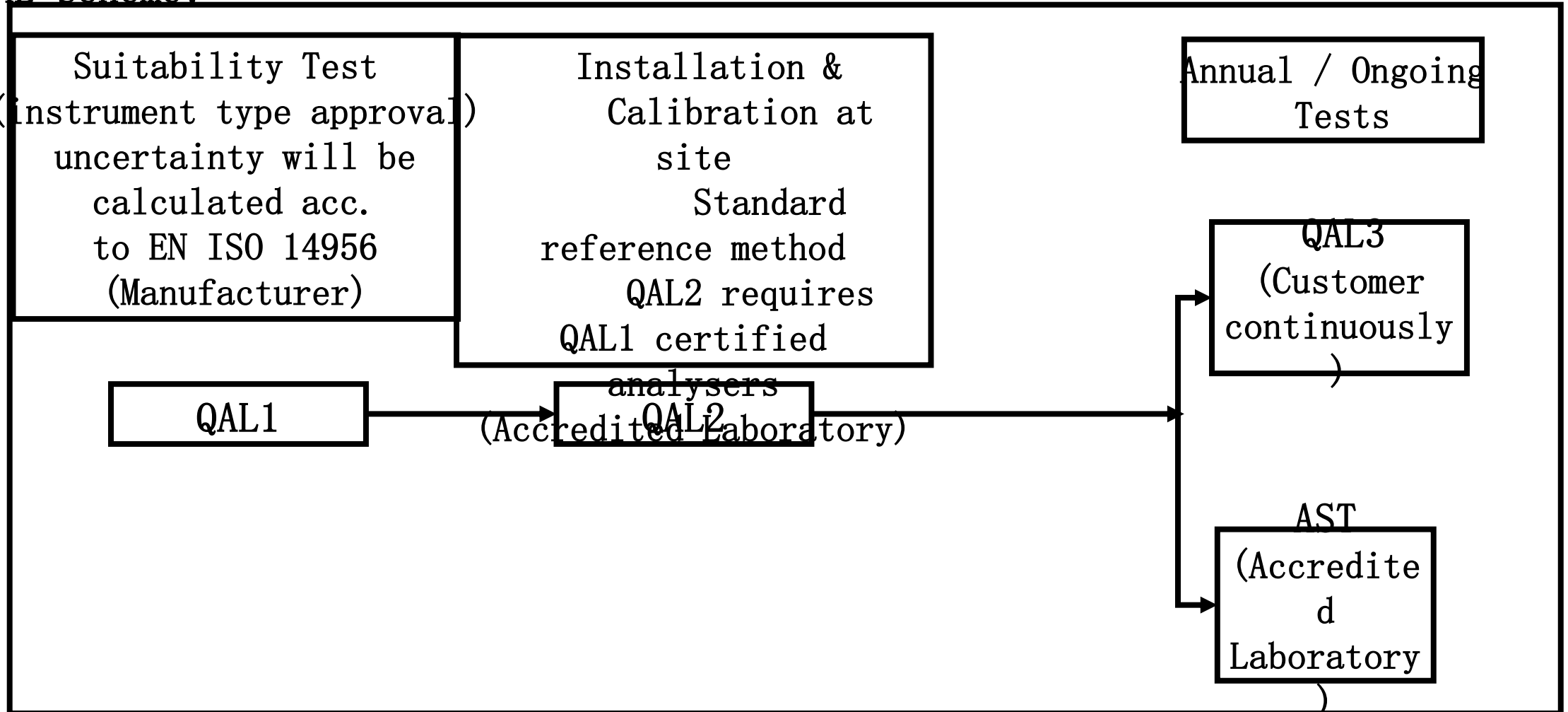


LEGISLATIVE MONITORING



QUALITY ASSURANCE 1 – EUROPE

In Europe, Quality Assurance of any CEMS follows EN 14181 and the following QAL-scheme:





QUALITY ASSURANCE 2 – EUROPE

QAL 1 is the „TUEV-Test“ (Germany) or MCERTS (UK)

QAL 2 is an extensive site acceptance test

QAL 1 is the „TUEV-Test“ (Germany) or MCERTS

QAL 2 is an extensive site acceptance test

QAL 3 – Annual Surveilling Test

AST – Annual Surveillance Test

AST is a short QAL 2

(zero span checks having regular maintenance)

only instruments having successfully passed

testing is performed annually by an accredited

laboratory or agency. In ASI fails, the

monitoring. Approvals can expire or be

instrumentation has to be rectified and immediately

revoked. Online information: www.gall.de/en

instrumentation. Only QAL 1 approved

a complete QAL 2 test is required.

instrumentation is allowed. QAL 2 to be

repeated every five years. AST

Accredited
laboratory



QAL1 / I

QAL1 is the instrument type approval performed by an accredited laboratory (agency) like TÜV in Germany or SIRA in the UK.

According to **EN 14181** ("Stationary source emissions - Quality assurance of automated measuring systems") only suitability tested measuring and data acquisition systems are allowed to be used for statutory measurement and monitoring.

The basis for the **certification** of measuring- and evaluating-systems is the European standard: **EN 15267**: "Air quality - Certification of automated measuring systems"

- part 1: "General principles"
- part 2: "Initial assessment of the AMS manufacturer's quality management system and post certification surveillance for the manufacturing process"



The following test procedures apply accordingly:

Stationary Emission Measurement Systems (CEMS)

EN 15267 part 3: "Performance criteria and test procedures for automated measuring systems for monitoring emissions from stationary sources"

Mobile Emission Measurement Systems

EN 15267 part 4: "Performance criteria and test procedures for automated measuring systems for periodic measurements of emissions from stationary source"

Qualitative Dust Measurement Systems

EN 15859: "Air Quality – Certification of automated dust arrestment plant monitors for use on stationary sources – Performance criteria and test procedures"

Emission Data Acquisition and Handling Systems (DAHS)

"German uniform practice for emission monitoring, suitability test of measuring and evaluating-systems for continuous emission measurement" and



INFORMATION on CERTIFIED PRODUCTS:

QAL1: <https://www.qal1.de/en/index.htm>

MCERTS: <https://www.csagroup.org/en-gb/services/mcerts/mcerts-product-certification/mcerts-certified-products/>



QAL2

QAL2 covers the calibration of the CEMS against nationally approved analytical methods applied by a test organization accredited to EN ISO/IEC 17025 (and MCERTS in the UK) by a national body, e.g. German EPA (Umwelt-Bundesamt). QAL2 has to be **repeated every 5 years**.

The **QAL2 procedure** covers the following activities:

1. Installation of the CEMS
2. Functional test(s) of the CEMS
3. Parallel measurements with the SRM for each parameter (as defined in the Site's Environmental Permit)
4. Data evaluation
5. Calculation of variability of the CEMS measured values
6. Test of variability of the CEMS measured values and validity of the calibration function
7. Reporting

8. Submission of QAL2 Calibration Factors () in the DAUC report



QAL3

QAL3 refers to the ongoing monitoring of a CEMS between the AST / QAL2 tests. Operators are required to keep an eye on the stability and performance of their monitoring systems and to perform the manufacturer-suggested maintenance and calibration in the suggested frequency.

All activities have to be documented; the completeness of the documentation is part of a successful AST / QAL2.

With QAL3 monitoring, operators of the CEMS are able to spot any drifts in the zero/span levels and point out if the system has any additional needs for maintenance or service.

Active AMCs from the instruments manufacturers are supportive in maintaining functionality and accuracy of CEMS.



AST

The **AST – Annual Surveillance Test** is very similar to the QAL2 test but is carried out on a smaller scale. These mini-QAL2 tests are functional spot tests that map out the performance of a CEMS.

The **AST procedure** covers the following activities:

1. Functional test of the CEMS
2. Parallel measurements with the SRM
3. Data evaluation
4. Calculation of variability of the CEMS's measured values
5. Test of variability of the CEMS's measured values and validity of the calibration function
6. Reporting
7. Check of the completeness of the QAL3 documentation

If the CEMS fails to meet the performance requirements outlined within EN14181 for the Annual Surveillance Test, the CEMS has to be rectified and a full QAL2 must be undertaken immediately.



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THANK YOU FOR LISTENING

ANY QUESTIONS?