

# The impact of new CEN/ISO standards, and EC legislative developments

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# Outline

- ➡ Current legislative demands
- ➡ Impact of new standards – 2000-2009
- ➡ CEMs performance – EN 15267 series
- ➡ Impending legislation and its impacts
- ➡ Impending standards
- ➡ Summary

# Legal demands

## ➡ EU Directives

- ➡ IPPC
- ➡ Waste Incineration
- ➡ Large Combustion Plant
- ➡ Emissions Trading
- ➡ Air Framework Directive

## ➡ Kyoto Protocol

- ➡ UNFCCC CDM – EN 14181 applied to N<sub>2</sub>O trading

## ➡ Continuous monitoring

## ➡ Periodic monitoring

## ➡ Apply CEN, ISO, national/other standards

# Application

- ➡ CEN TC 264 and ISO TC 146
  - ➡ Many new standards
- ➡ CEMs – performance standards and testing
- ➡ Portable systems
- ➡ Monitoring sites and provisions
- ➡ Quality assurance – e.g. EN 14181 and EN 15267-3
- ➡ Uncertainty determinations
- ➡ MCERTS
  - ➡ CEMs, CAMS, portable emissions monitors, periodic monitoring...
- ➡ Permits
  - ➡ Specificity
  - ➡ Flexibility – ‘...unless otherwise agreed in writing’ clause

# CEMs and provisions



# CEMs and provisions

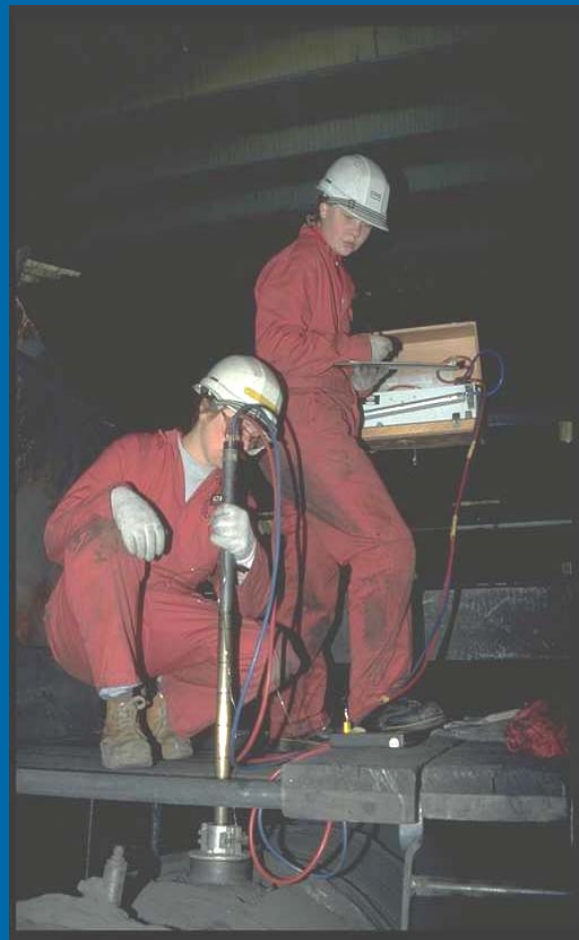




# CEMs



# Periodic monitoring





# Quality assurance



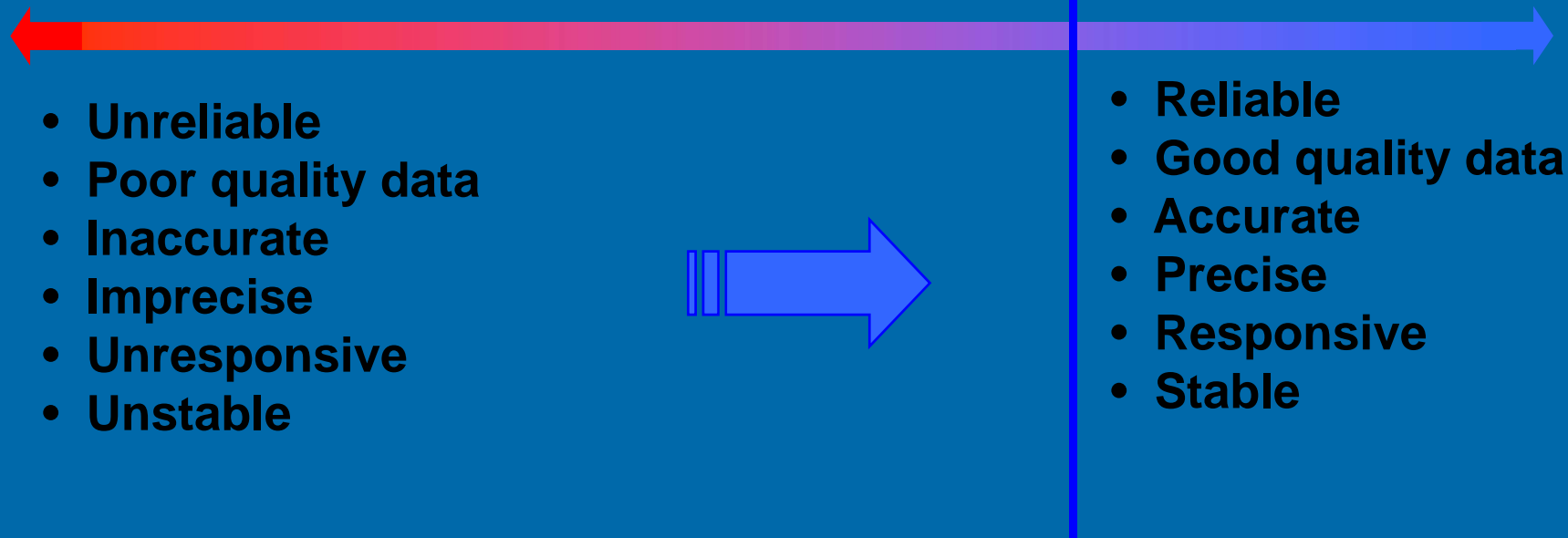
# Impacts

- ➡ Big improvement in quality
- ➡ Data reliability
- ➡ More attention paid to monitoring
- ➡ Cost-benefits
- ➡ Better quality CEMs monitoring = less periodic monitoring
- ➡ So what was it like before?

# The evolution of CEMs standards – EN 15267 series

# CEMs - variable quality and in the past

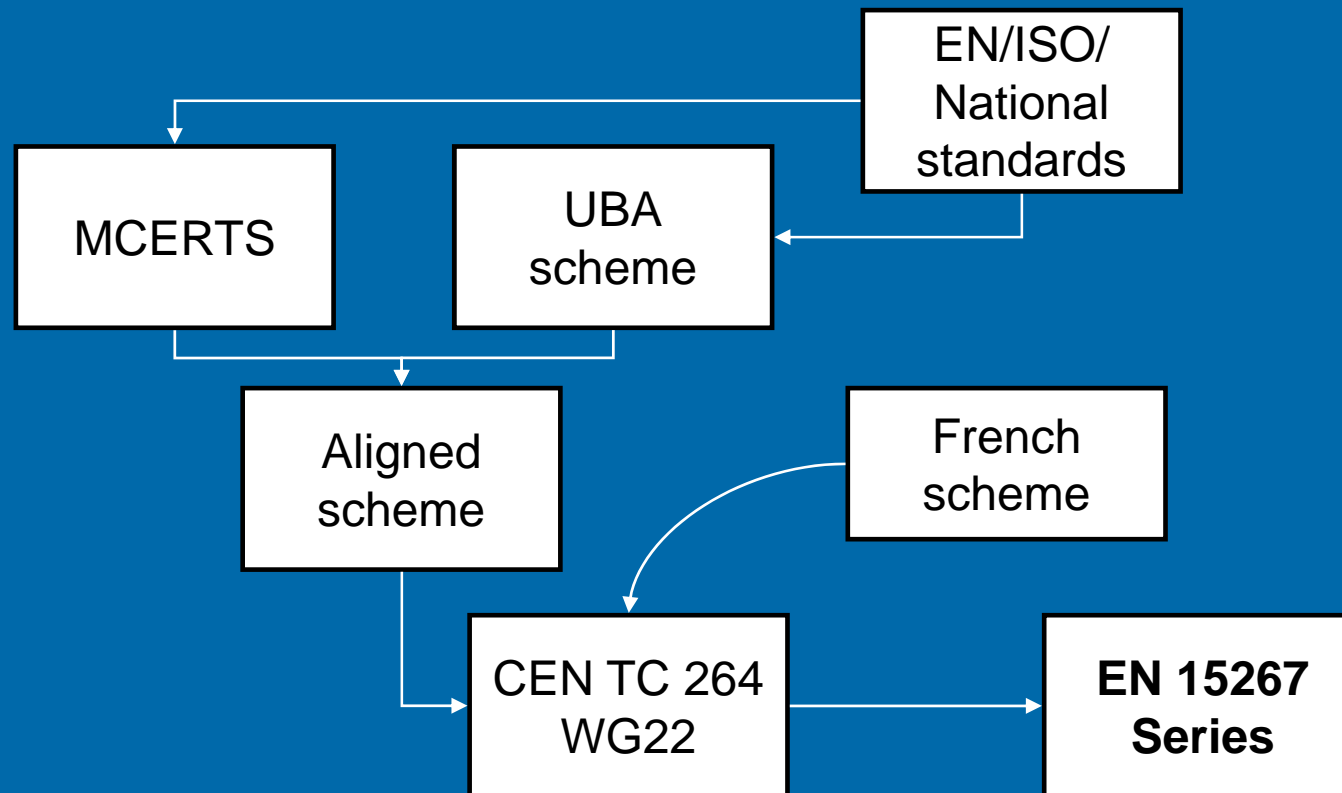
## The AMS spectrum



# Solution

- ➡ Apply performance requirements for AMS
  - ➡ Apply specifications and standards
- ➡ Test according to those requirements
- ➡ Different grades of performance requirement
  - ➡ Higher standards for more demanding applications
- ➡ Requirements for all test laboratories
  - ➡ Standards, accreditation
- ➡ Standards applied through national schemes

# Development of EN 15267-3





# CEN TC 264 WG22

➡ Established 2001

➡ Participants

➡ CEM manufacturers

➡ Regulators

➡ Test laboratories

➡ Industrial-process operators

➡ Three sub-groups

➡ Stack CEM, performance specifications and testing

➡ Ambient CEM, bridging document

➡ Quality assurance and certification

# Four stages

- ➡ Stage 1 – Type testing
- ➡ Stage 2 – QA of design control and production
- ➡ Stage 3 – Approval
- ➡ Stage 4 – Continuing surveillance
  - ➡ Control of manufacturing reproducibility
  - ➡ Control of design changes
    - Maintenance of performance in modified designs

# Performance standards - CEMs

Standard	Scope
EN 15267-1	Framework for testing (verification) and certification (QAL1 approval)
EN 15267-2	Quality management system for AMS design and manufacturing control
EN 15267-3	Stack-AMS performance specifications and test procedures
prEN 15859	Particulate monitoring CEMs outside scope of WID and LCPD

# EN 15267-1

## ➡ Framework standard

- ➡ Flexibility to allow national variations

## ➡ How the system works

## ➡ Mutual recognition

- ➡ One test, one certification

## ➡ Links to standards for:

- ➡ CEM performance standards

- ➡ CEM testing

- ➡ Stack emissions and ambient air monitoring

- ➡ Quality assurance of manufacturing

# EN 15267-2

➡ Quality assurance of design and manufacturing

➡ Design control

➡ Changes to AMS assessed

➡ Theoretical assessments

➡ Possibly further tests

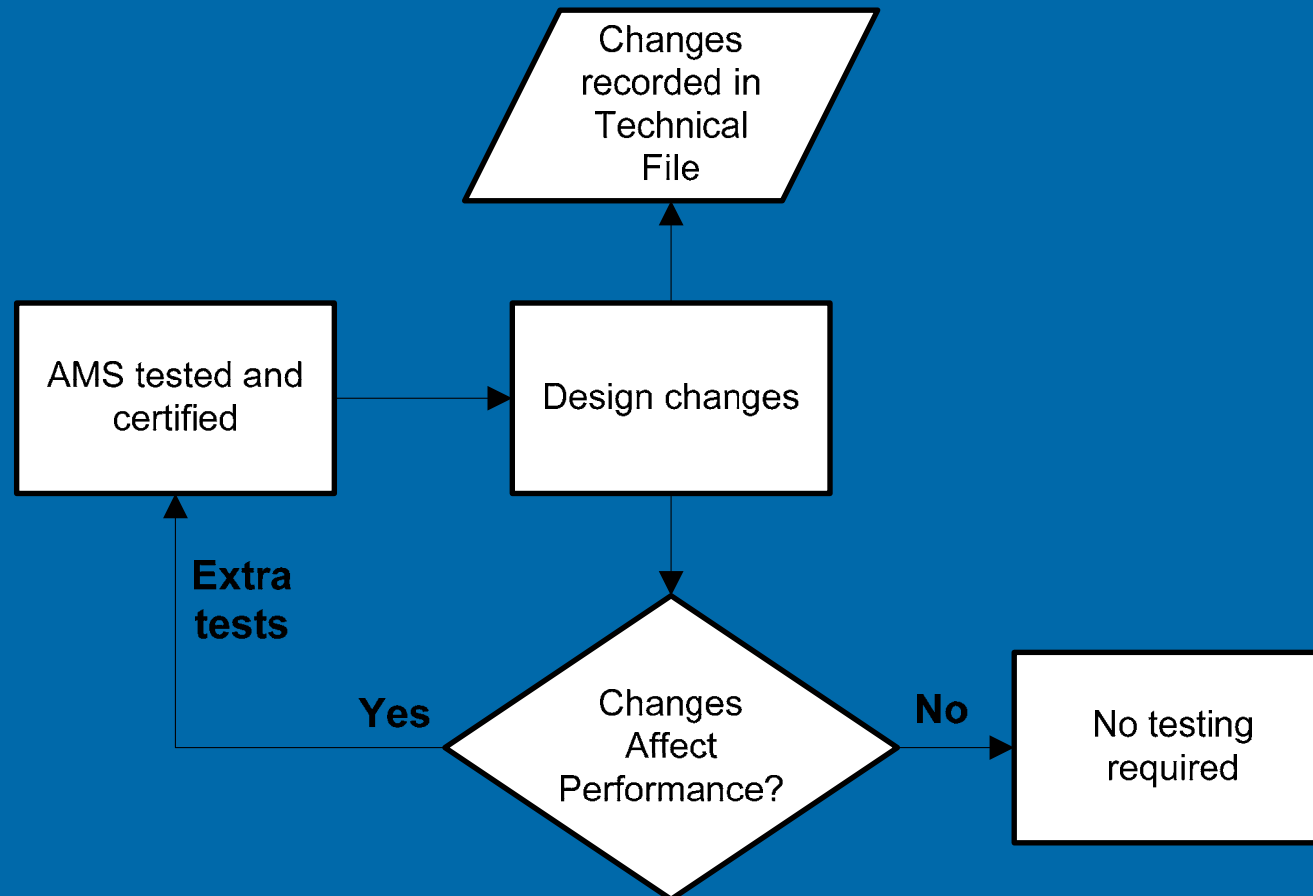
➡ Based on ISO 9001

➡ Supplements ISO 9001

➡ Intention

➡ Assessments by 3<sup>rd</sup> party certification bodies

# EN 15267-2





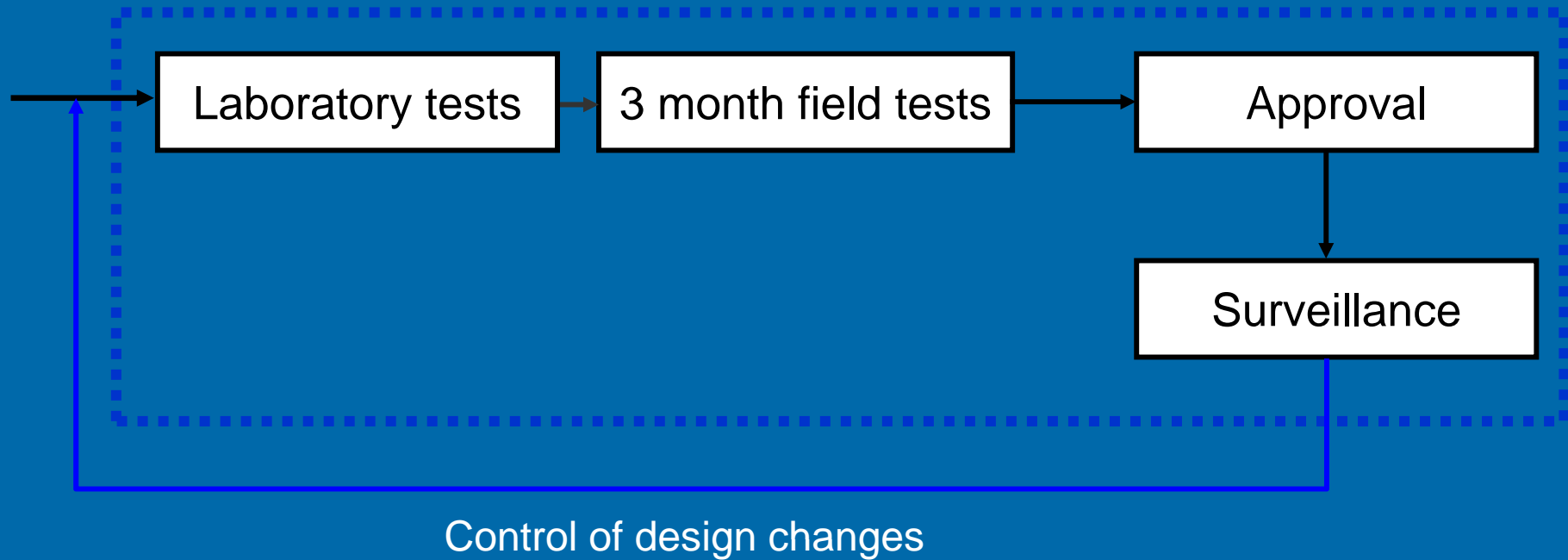
# EN 15267-3

- ➡ The core document
- ➡ CEM performance standards
- ➡ CEM field tests

# Performance specifications, e.g....

- ⇒ Linearity
- ⇒ Interferences
- ⇒ Response time
- ⇒ Detection limit
- ⇒ Effect of environmental conditions
- ⇒ Reproducibility
- ⇒ Availability and maintenance interval
- ⇒ Zero and span drift
- ⇒ Field test

# Evaluation – a common model



# Some other important standards

- ➡ EN 15259 – provisions, planning and strategy
- ➡ EN/TS 15674 – Elaboration of methods
- ➡ EN/TS 15675 – Application of ISO 17025
- ➡ Revised EN 1948 series

# Forthcoming standards

- ➡ prEN ISO 23210 – PM<sub>10</sub> and PM<sub>2.5</sub>
- ➡ prEN 15859 – PM CEMs for IPPC
- ➡ prEN ISO 11771 – mass emissions/factors
- ➡ prEN ISO 25139 – CH<sub>4</sub> SRM by GC
- ➡ prEN ISO 25140 – CH<sub>4</sub> SRM by FID
- ➡ prEN ISO 21258 – N<sub>2</sub>O by NDIR
- ➡ Standards for volumetric flow – WG23

# Forthcoming legislation

## ⇒ Revised IPPC

- ⇒ Industrial Emissions Directive

## ⇒ EC Climate Change Package

- ⇒ Revised Emissions Trading Directive

- ⇒ Carbon Capture and Storage

- ⇒ Growing application of monitoring to emissions trading



# Summary

- ➡ EC Directives specify performance requirements for monitoring systems
  - ➡ Through uncertainty budgets and international/national standards
- ➡ The EU has type-testing and approval schemes for CEMs
- ➡ The schemes have a lot in common
- ➡ EN 15267 series
  - ➡ Aligned and updated these schemes
  - ➡ Mutual recognition
  - ➡ Adaptable to other fields, e.g. water-monitoring systems
- ➡ Many other new standards now underpin monitoring
- ➡ Wider application in new legislation



# Conference

**Next presentation at 11.40**

## **Developments in Accreditation of SEM**

- Accreditation for BS EN 14181
- Improving Stakeholder Confidence

**Jeff Ruddle UKAS**