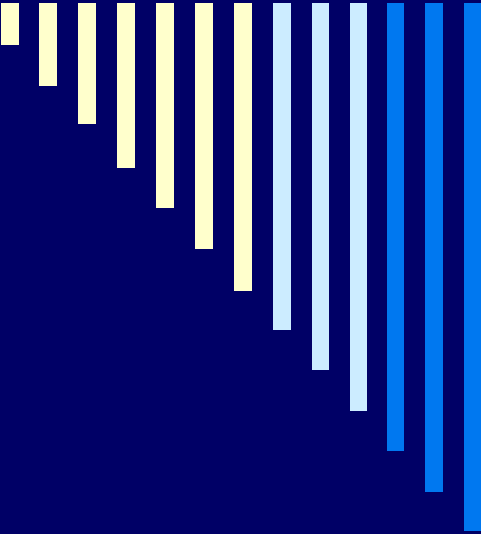


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*Feedback from  
assessments of ExCBs  
and ExTLs – Areas  
where difficulties are  
experienced*

**Jim Munro**

**Chairman IECEx Panel of Assessors**

**Note: Assessors are invited to submit the problems they have often found at ExCBs and ExTLs to Jim Munro ([mail@jimmunro.org](mailto:mail@jimmunro.org)) to permit him to produce an expanded collection of common problems.**



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# Scope of presentation

- This training session will:
  - Look at some common problems and how to overcome or avoid them
  - Discuss IECEx and other documents ExCBs and ExTLs need to consider
  - Discuss some of the approaches that can be used to help bodies be accepted



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# Types of issues/problems

Types of issues/problems:

- Applying IECEx Procedures, and IEC and ISO standards
- System issues related to ISO/IEC 17065 and 17025
- Technical issues



# Applying IECEx Procedures and IEC Standards - ExCB

- IECEx 02 IECEx Scheme rules of procedure
- OD003 (Parts 1, 2 and 3) IECEx Assessment procedures
- OD009 Issuing of CoCs, ExTRs and QARs
- ISO/IEC 80079-34 : Explosive atmospheres – Part 34: Application of quality systems for equipment manufacture
- F-001 and F-002 – QAR forms



# Applying IECEx Procedures and IEC Standards - ExCB

- OD025 Management of assessment and surveillance programs for manufacturers
- OD026 IECEx– Guidelines for the qualification of auditors
- OD017 Drawing and documentation guidance
- OD011 – Guidance on the on-line system
- OD024 - Testing, or witnessing testing at a manufacturer's or user's facility
- Other ODs
- ExTAG Decision Sheets



# Applying IECEx Procedures and IEC Standards – ExTL

- IECEx 02 IECEx Scheme rules of procedure
- OD003 (Parts 1 and 2) IECEx Assessment procedures
- IECEx Operational Document OD009 Issuing of CoCs, ExTRs and QARs
- IECEx OD 203 IECEx Proficiency Testing Program
- Other ODs
- IECEx Technical Capability Documents (TCDs)
- ExTAG Decision Sheets
- IEC standards corrigenda
- IEC interpretation sheets (I-SHs)



# Applying IECEx Procedures -

- Use of data, subcontracting and off site testing – application of OD024
- For third party laboratories - hierarchy:
  - IECEx
  - IECEE
  - Local accreditation to ISO/IEC 17025
  - No accreditation
- Identification of and contracts with subcontractors
- Assessment and control is critical



# Applying IECEx Procedures -

- Appeals – to IECEx
- QARs
  - Manufacturing surveillance - adjustment where local system is different (not a Type 5 Scheme)
  - Application of ISO/IEC 80079-34
  - Correct dates in QARs
- ExTRs
  - Lack of supporting data
  - Errors
  - Lack of support for decisions not to do tests – engineering rationale





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# Applying IECEx Procedures -

- Clear delineation of responsibilities of people within ExCB and ExTL, including:
  - Who makes certification decision
  - Who signs what
  - Deputies where necessary



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# ISO/IEC 17065 and 17025

- Using uncontrolled pieces of paper:
  - For recording results
  - For useful data such as conversion lookup tables
- Capturing and retaining original data
- Internal audits - Not always done to schedule



# ISO/IEC 17065 and 17025

## □ Calibration

- Instruments not in calibration
- Extending calibration periods without justification
- Humidity calibration of environmental chambers
- Checking certificates after calibration

## □ Inconsistencies in quality systems

## □ Defining and recording competencies

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# ISO/IEC 17065 and 17025

- Correction of errors when writing down readings
- Clear test plans addressing standards (and their editions), amendments, interpretations, decision sheets



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# Technical Issues

- Technical issues related to:
  - Equipment
  - Procedures
  - Competency



# Technical Issues –Intrinsic Safety

- Spark test apparatus
  - Inductors and capacitors
  - Periodic full calibration
- Temperature classification
  - Measurement
  - Assessment
- Small component ignition
- Battery short-circuit tests



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# Technical Issues – Flameproof

- ❑ Version control of software where computers used
- ❑ Condition and handling of measuring devices such as vernier callipers
- ❑ Lack of calibrated thread gauges



# Technical Issues – Flameproof

- Gas measurement
  - Calibration and maintenance of oxygen analysers
  - Validation of calculations based on oxygen measurement taking into account paramagnetic effect
  - Traceability of certificates for mixed gases
- Flameproof pressure determination systems
  - Calibration approaches - static and dynamic
  - Noise or other interference on the system





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# Technical Issues – Temperature Measurement

- ❑ Location of tests – drafts etc
- ❑ Lack of attention to measurement techniques
- ❑ Making of thermocouples
- ❑ Thermocouple and system calibration
- ❑ Thermocouple attachment
- ❑ Measurement of ambient temperature
- ❑ Hot spot location



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# Technical Issues –IP Testing

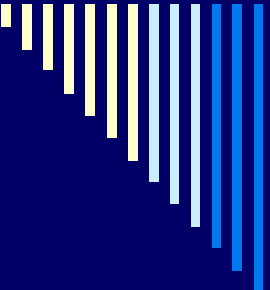
- Dust testing – keeping dust in circulation – see ExTAG decision sheet:
  - Humidity - heating
  - Vibrators – rappers – hoses
  - Slope of hoppers
  - Viewing windows - wipers
  - Chamber leaks
  - Measurement of volume changes - totalising flowmeter
  - Pressure tests for Ex t



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# Technical Issues –IP Testing

- Water testing –
  - Temperature differential - control temperature or use of pressure balance
  - Nozzle calibration
  - Blocked nozzles



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# Technical Issues – Other Testing

- Electrical resistance test–
  - Dimensions of painted electrodes (note change in latest edition of IEC 60079-0)
  - Meeting tolerances
  - Measuring dimensions



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# Proficiency testing program

- ❑ Lack of involvement by some bodies, particularly applicant ExTLs
- ❑ Not attending workshops
- ❑ Not taking account of best practice papers



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## Conclusion

- Despite the seemingly long list of issues here – everyone seems to get there in the end!