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

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

- Clear delineation of responsibilities of people within ExCB and ExTL, including:
  - Who makes certification decision
  - Who signs what
  - Deputies where necessary
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
ISO/IEC 17065 and 17025

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

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

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

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

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