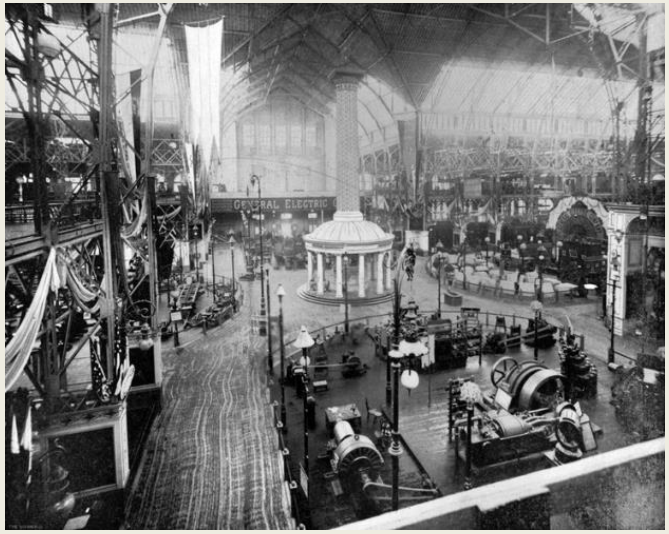
IECEx Assessor Training – 5 September 2022 Remote

Chris AGIUS + Christine KANE

IECEx Secretariat

IEC and IECEx Background

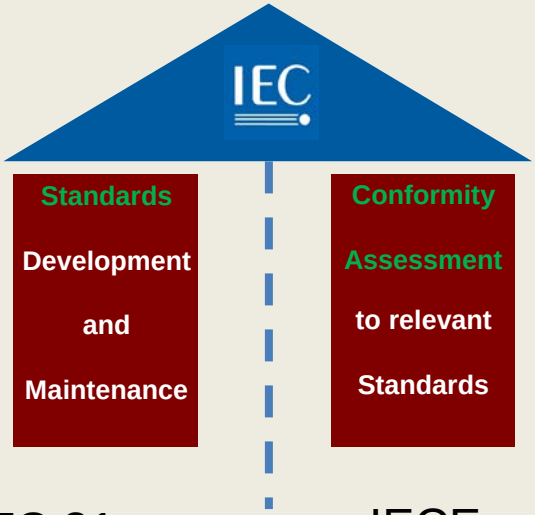
IEC: the beginning…….
St. Louis 1904: palace of electricity



- International Electrotechnical Commission (IEC) – Swiss incorporated Not For profit Company
- Officially formed in 1906 – Lord Kelvin the first IEC President
- Formed to serve needs of industry
- Continues to evolve to the needs of industry

During the 1904 Convention of Scientists is was felt that a need exists to "*Standardise on Terminology*" when discussing Electrotechnology, thereby planting the seed for IEC. In 1906 IEC was formed with TC 1 "Terminology" the first Committee of IEC and still exists today.

Not just a Standards writing Body!

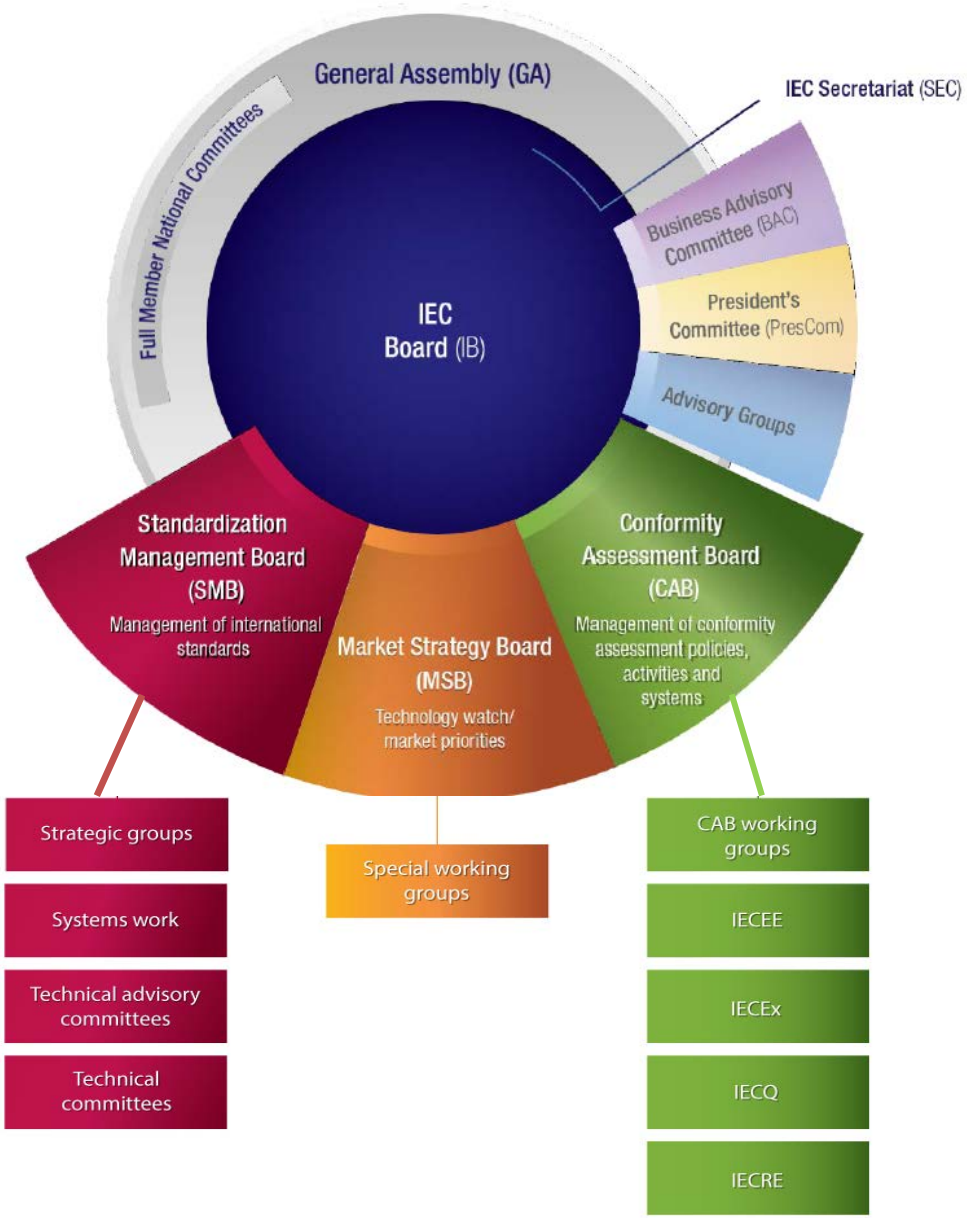


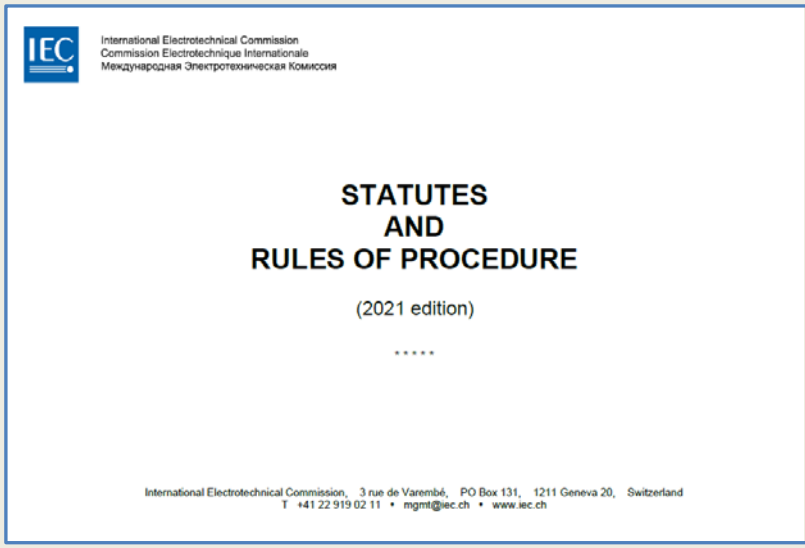
Eg IEC TC 31

IECEx
IECEE
IECQ
IECRE

The 2 Sides to the House of IEC:
Standards Development + Conformity Assessment

IEC / IECEx: **Overview of Governance Structure**





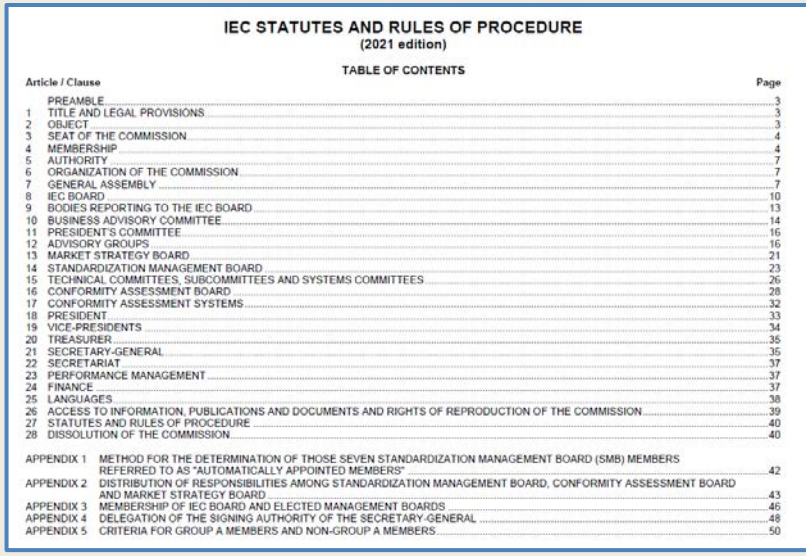
International Electrotechnical Commission
Commission Electrotechnique Internationale
Международная Электротехническая Комиссия

STATUTES AND RULES OF PROCEDURE

(2021 edition)

*****

International Electrotechnical Commission, 3 rue de Varembé, PO Box 131, 1211 Geneva 20, Switzerland
T +41 22 919 02 11 • mgmt@iec.ch • www.iec.ch



IEC STATUTES AND RULES OF PROCEDURE
(2021 edition)

TABLE OF CONTENTS

IEC Statutes covers Conformity Assessment eg IECEx

STATUTES

CONFORMITY ASSESSMENT SYSTEMS (Article 17)

The conformity assessment (CA) work of the Commission is carried out by CA systems (IEC CA Systems), each having a different scope of activity as decided by the Conformity Assessment Board (CAB) to which the IEC CA Systems report. The CAB delegates the management and operational responsibility related to the IEC CA System's activities to each IEC CA System's management committee. The CAB supervises the IEC CA Systems' management committees, has the authority to disband them (and/or the IEC CA Systems themselves), and is empowered with any measure described in these Statutes and the Rules of Procedure. In consultation with the relevant CA System's management committee, the CAB may modify the Basic Rules of any of the IEC CA Systems on its own initiative.

Full and Associate Member National Committees, or fully representative governing bodies reporting to them, remaining under their instruction and notified by them, are eligible to seek membership of the IEC CA Systems. A body from a non-IEC member country may, with the concurrence of the IEC Board regarding general Commission policy and satisfying the specific requirements for membership of an IEC CA System, be admitted to that CA activity. Suspended National Committees, or bodies notified by them for IEC CA System membership, shall not be permitted to retain or be admitted to membership of any CA activity during the period of suspension.

IEC CA Systems are set up, modified, or disbanded by the CAB. They may create and delegate responsibilities to bodies in accordance with the Basic Rules, which are approved or modified by the CAB. Each IEC CA System is governed by a management committee composed of member bodies (representatives of National Committees, or bodies notified by National Committees), of participating countries. Bodies from non-IEC member countries participating in an IEC CA System may also be represented on the management committee. Officers as defined in the IEC CA Systems' Basic Rules are appointed by the CAB based upon nomination by the CA Systems management committee.

Each CA System shall be responsible for planning its own budget. The CAB shall be responsible for validating and proposing the CA Systems' budgets, in accordance with Articles 7, paragraph five, item e), and 8 b), for integration into the IEC budget process. Once the IEC budget has been approved by the

General Assembly, and subject to Article 8 b), the CAB is responsible for monitoring the management of the CA Systems' budgets.

In the case of a conflict, contradiction, or inconsistency between the provisions of these Statutes and/or Rules of Procedure on the one hand and the provisions of the Basic Rules of a CA activity on the other hand, the provisions of the Statutes and/or Rules of Procedure shall take precedence.

RULES OF PROCEDURE

CONFORMITY ASSESSMENT SYSTEMS (Clause 17)

A Conformity Assessment (CA) System is formally established once its Basic Rules have been approved by the Conformity Assessment Board (CAB). A CA System wishing to modify its Basic Rules shall submit the text of the proposed modification to the CAB and the modification is only implemented once approved by the CAB.

The CAB shall consult with the relevant CA System's management committee before modifying its Basic Rules.

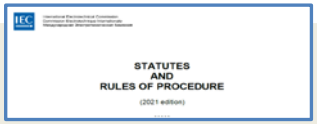
A CA System Executive Secretary is an employee of or contractor to the Commission and a decision to appoint the Executive Secretary of a CA System requires the prior consent of the Secretary-General. The CA System Chair shall consult with the CAB Chair and the Secretary-General before a proposal is made to a CA System management committee for the nomination of a CA System Executive Secretary.

CA Systems Executive Secretary and Chair are required to report to and participate in CAB meetings.

Each CA System shall develop its own Rules of Procedure consistent with the CA System's Basic Rules and shall operate in accordance therewith.

Each CA System shall notify its Rules of Procedure to the CAB for endorsement.

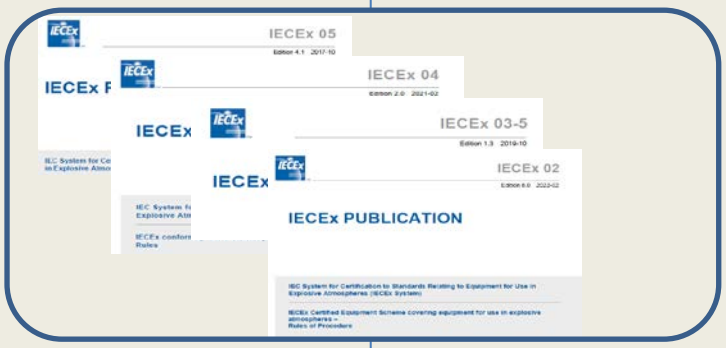
IECEx Rules Hierarchy



IEC Statutes – Overall Governing Document of the IEC

IEC CA 01 + IECEx 01-S together form the Basic Rules of the IECEx System (covering all IECEx Schemes)

www.iecex.com/publications/iecex-rules/



IEC 0X = IECEx Rules of Procedures for the Specific Scheme "Equipment / Services or CoPC" – Sets out the What is to be done

IEC ODs = IECEx Operational Documents that support the RoPs for the Specific Scheme – Sets out **the How is** the What is to be done

www.iecex.com/publications/operational-od/

Standard Forms and Templates provide the consistency among the reporting by all within IECEx

www.iecex.com/

Plus Many More ODs + Forms/ExTRs + Decision Sheets + Guides, for the Scheme

Role of IECEx Website

- IECEx Library of Published Rules / Operational Documents / Decision Sheets / Standard Forms, eg ExTRs / QARs / FARs / PCARs

- IECEx Library of Members Committee Documents / Resources / News

- IECEx On-Line Certificate System – Publicly available access – in real time – of ALL issued IECEx Certificates

- Given the growth and development of the IECEx System and its Schemes the IECEx Secretariat is now making use of
  - Instructional Video Modules “IECEx Website Guides”
    - Module 1 – Intro to the IECEx website
    - Module 2- Intro to the On-Line Certificate System
    - Module 3 – Back Office access for ExCB

- In addition, IECEx now have an animated video for each of the 3 IECEx Schemes, Equipment / Services / CoPC

- Access from the IECEx home page www.iecex.com

Role of the IECEx Secretariat

- **Day to Day running of the System**
- **Financial Management, with Treasurer and Executive**
- **Oversee Development of new services, eg H2 expansion**
- **Support IECEx Committees+WGs Maintenance of existing services and supporting elements, eg Documentation, website etc**
- **Assist with Promotion and Marketing and growth.**
- **Compliance, eg:**
  - Industry complying with IECEx Rules and General Business practise, eg any misuse of the IECEx
  - Membership Compliance, eg ExCBs+ExTLs
  - Secretariat Compliance with roles and responsibilities

Specific Schemes of the IECEx

Equipment


IECEx Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION
IEC Certification Scheme for Explosive Atmospheres

Physikalisch-Technische Bundesanstalt (PTB)

Ex Equipment, Components + Systems + Mechanical Ex Equipment

Assemblies


IECEx Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION
IEC Certification Scheme for Explosive Atmospheres
UNIT VERIFICATION

VTT EXPERT SERVICES LTD

Ex Equipment Unit Verification e.g. "Assemblies"

Services


IECEx CoC Certified Service Facility

INTERNATIONAL ELECTROTECHNICAL COMMISSION
IEC Certification Scheme for Explosive Atmospheres

Cyclect Electrical Engineering PTE Ltd.

Underwriters Laboratories Inc (UL)

Ex Services, eg Repair to IEC 60079-19

Personnel

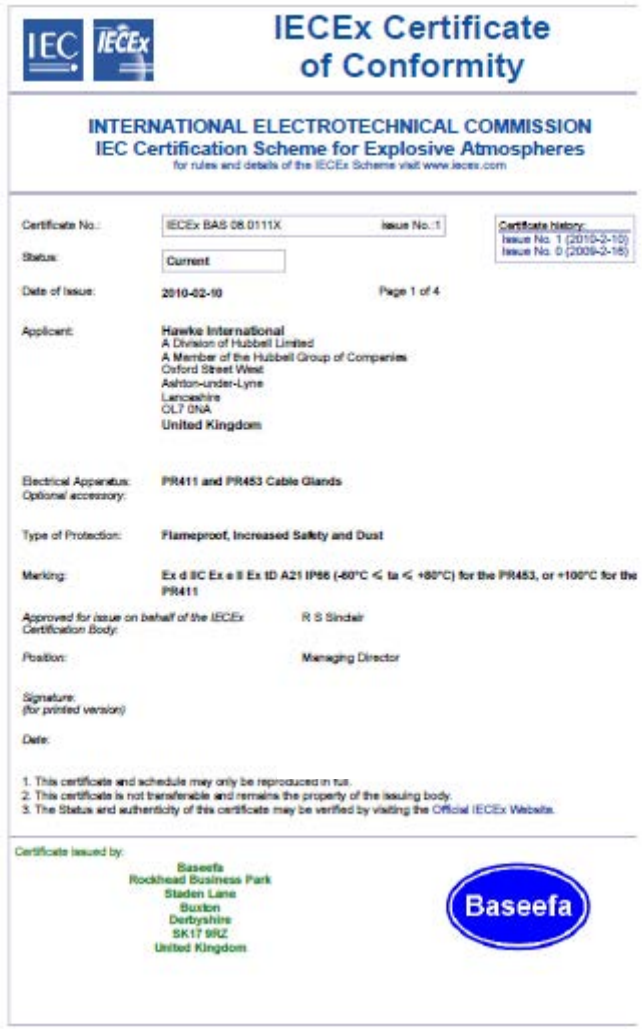

IECEx Certificate Personnel Competence

INTERNATIONAL ELECTROTECHNICAL COMMISSION
IEC Certification System for Explosive Atmospheres

Manggau Galawing

Ex Competent Person, with Photo ID Card

IECEx On-Line Certificate System



IECEx Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION
IEC Certification Scheme for Explosive Atmospheres
for rules and details of the IECEx Scheme visit www.iecex.com

Certificate No.: IECEx BAS 08.0111X Issue No.:1

Certificate history:
Issue No. 1 (2010-2-10)
Issue No. 0 (2009-2-16)

Status: Current

Date of Issue: 2010-02-10 Page 1 of 4

Applicant:
Hawke International
A Division of Hubbell Limited
A Member of the Hubbell Group of Companies
Oxford Street West
Ashton-under-Lyne
Lancashire
OL7 0NA
United Kingdom

Electrical Apparatus: PR411 and PR453 Cable Glands
Optional accessory:

Type of Protection: Flameproof, Increased Safety and Dust

Marking: Ex d IIC Ex e II Ex tD A21 IP66 (-60°C ≤ ta ≤ +80°C) for the PR453, or +100°C for the PR411

Approved for issue on behalf of the IECEx Certification Body: R S Sinclair

Position: Managing Director

Signature: (for printed version)

Date:

1. This certificate and schedule may only be reproduced in full.
2. This certificate is not transferable and remains the property of the issuing body.
3. The Status and authenticity of this certificate may be verified by visiting the Official IECEx Website.

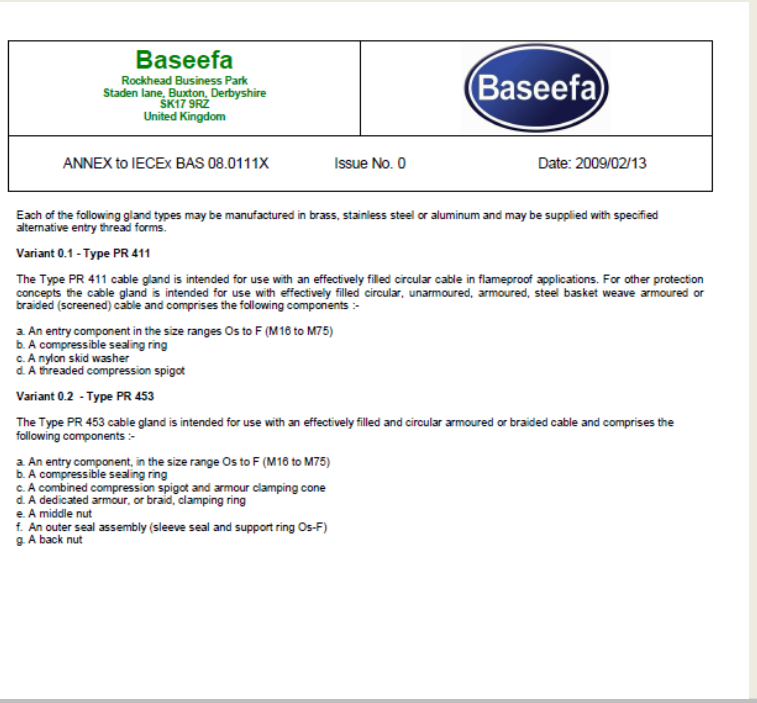
Certificate issued by:
Baseefa
Rockhead Business Park
Staden Lane
Buxton
Derbyshire
SK17 9RZ
United Kingdom

An IECEx Certificate is more than just a piece of paper or electronic file!!!

It is a Compliance Instrument used by different stakeholders, including Inspectorates + Regulators.

Key Message:

<Certificates need to be clear + Credible>



Baseefa
Rockhead Business Park
Staden lane, Buxton, Derbyshire
SK17 9RZ
United Kingdom

ANNEX to IECEx BAS 08.0111X Issue No. 0 Date: 2009/02/13

Each of the following gland types may be manufactured in brass, stainless steel or aluminum and may be supplied with specified alternative entry thread forms.

Variant 0.1 - Type PR 411

The Type PR 411 cable gland is intended for use with an effectively filled circular cable in flameproof applications. For other protection concepts the cable gland is intended for use with effectively filled circular, unarmoured, armoured, steel basket weave armoured or braided (screened) cable and comprises the following components :-

a. An entry component in the size ranges Os to F (M16 to M75)
b. A compressible sealing ring
c. A nylon skid washer
d. A threaded compression spigot

Variant 0.2 - Type PR 453

The Type PR 453 cable gland is intended for use with an effectively filled and circular armoured or braided cable and comprises the following components :-

a. An entry component, in the size range Os to F (M16 to M75)
b. A compressible sealing ring
c. A combined compression spigot and armour clamping cone
d. A dedicated armour, or braid, clamping ring
e. A middle nut
f. An outer seal assembly (sleeve seal and support ring Os-F)
g. A back nut

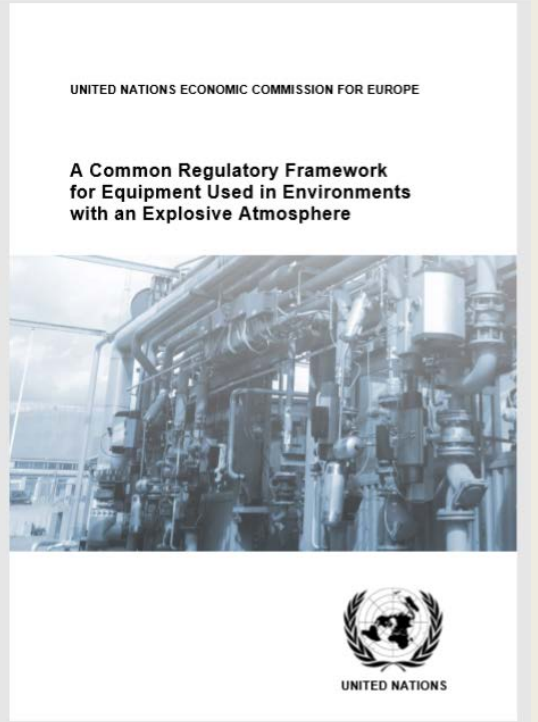
How is IECEx used within Countries?

- **Regulatory:** Government Regulations may require compliance with IEC TC 31 Standards AND accept Ex Products, Services (e.g. Repair Workshop), or Competent Persons covered by IECEx certification satisfy safety requirements of the country.
  - IECEx - Recommended by the United Nations, UNECE publication for adoption with Regulating Ex areas.

- **Contractual:** Companies purchasing Ex Equipment and Services may require IECEx Certification as part of their Procurement process and Risk Mitigation for Compliance with Safety Standards.

- **Voluntary:** Companies offering Ex Equipment and Services may use IECEx to promote their goods and services, e.g. market differentiation

- **Mutual Recognition**: Testing and Auditing Reports (ExTRs / QARs) used by Certification and Approval bodies to grant their local Approvals and certifications


UNITED NATIONS ECONOMIC COMMISSION FOR EUROPE

A Common Regulatory Framework for Equipment Used in Environments with an Explosive Atmosphere

UNITED NATIONS

B. Definition of applicable conformity assessment procedures

22. Compliance with this CROs shall be by use of an international certification scheme such as the IECEx for direct market acceptance of products carrying IECEx Certification. Alternatively, where national legislation does not allow for use of IECEx Certificates, national certification of compliance should be based on IECEx testing and assessments.

Role of IECEx Assessors ???

- IECEx Assessors key role : **ENSURE IECEx RULES + ODs are MET** by ExCBs, ExTLs, ATFs

- You are the **“Eyes”** and **“Ears”** of the IECEx Membership and Stakeholders that rely on IECEx Certifications, to ensure ExTLs + ExCBs meet IECEx requirements

- Carry out the Formal Assessment of ExTLs and ExCBs under the IECEx Peer Assessment Process, in line with ISO/IEC 17040 + IECEx Rules and Operational Documents, ODs

- National accreditation held by ExTL and ExCBs a good start **BUT NOT** the complete story – does not take into account the IECEx Rules and Standard Operating procedures (ODs) nor the type or format of reporting (ExTRs + QARs) nor the issuing of IECEx CoCs

IECEx Expectation of IECEx Assessors

- **At all times Act Professional and in the interests of the IECEx**
- **Have full working knowledge of the IECEx Rules and ODs**
- **Have sufficient technical knowledge and expertise**
- **That a thorough and complete assessment is conducted**
- **When raising a Non Compliance or potential issue, be sure to link it with a requirements of the Scheme, i.e. reference the Standards (eg ISO/IEC 17065) / IECEx Rules / OD and Clause reference**
- **You are the Eyes and Ears of the IECEx community**
- **Ensure all reporting and forms are complete**
- **Be mindful of the ExCBs and ExTLs investment in IECEx by providing timely responses and maintain communication prior, during and after assessment**

Secretariat Feedback + Reminders !!

- **Appreciates the concerted efforts by all Assessors+ ExCBs/ExTLs that have ensured that the IECEx ExCB/ExTL assessment program maintains credibility Thank You**
- **Timely response to issues and communication – especially when resolving Nonconformances**
- Assessor Travel Documentation e.g. notification for visa and allow sufficient time – as we start to re-connect with travel (some areas)
- Use of Updated IECEx Forms https://www.iecex.com/members-area/new-document-library-page/assessors-package/
- Ensure reports are complete and assume the reader needs full information – do not assume the reader knows!!! Show closure of any items raised
- Listing of Tests witnessed in the final report to ExMC
- F004 Site Assessment report – all items to be shown as closed before sending to Secretariat
- Secretariat Reviews Reports from Lead Assessors – effective communication required

Secretariat Feedback + Reminders !!

- Use of Desk Top Review Report (DTR) as provided by the Secretariat where applicable
- Use current Forms – refer Assessor Package https://www.iecex.com/members-area/new-document-library-page/assessors-package/
- **TCD** – be careful to ensure that requirements marked with an * have been completed to show where/how the testing capability is achieved. ALL sections of TCD to be completed relevant to the ExTL's scope
- **TCD Example**
- Subcontracting / Contracting (New ExTAG/662/Inf) for backgroud
- Finances + Invoices (to be clear what it is for and payment currency) – Await costs confirmation acceptance from Body prior to starting. Noting some costs estimates seem to vary and will be reviewed to provide further guidance to that provided in OD 032 for post COVID
- Be knowledgeable about the IECEx On-Line Certificate System from the IECEx home page www.iecex.com Secretary happy to provide a tutorial
  - Remember OD 011 series Guides for use of the IECEx On-Line Certificate System + Video recordings

Response to COVID-19

IECEx OD 060 – Edition 2.1 *IECEx Guide for Business Continuity – Management of Extraordinary Circumstances or Events Affecting IECEx Certification Schemes and Activities*

- Provisions for use of Remote assessment, including for applicants
- Also Covers handling of Audits of manufacturers and Facilities and CoPC Scheme assessments by ExCBs
- Appreciate how Assessors and ExCBs/ExTLs are adapting to the new OD 060
- OD 060 remains in force till end 2022 but Executive will be discussing its application beyond

Looking ahead

- A survey of Assessors was conducted as part of Lessons Learned and report issued as ExMC/1753/Inf thanks to all Assessors for participating – Valuable information to be used for reviews within ExAG for going forward Post COVID
- Travel bans likely to continue for some countries for some time
- Secretariat and Officers of the IECEx Assessment Group, ExAG (Dr Munro Ms Holdredge) are available to support.

Reporting on use of Remote provisions

Extract from an issued Report ExMC/1872/DV where Remote provisions of OD 060, also similar approaches used prior to COVID as provided by OD 032 provisions:

1. **DATES OF ASSESSMENT:**

The Assessment was conducted over the period from **22 March 2022 – 11 July 2022**, noting the following key assessment dates:

22, 23 and 24 March 2022:3 days of up to 6 hrs each day of assessment for compliance with ISO/IEC 17024

25 March 2022 On-Site assessment of Carole Park Qld location and assessment centre (including Practical)

30 March 2022 Technical Interview of Examiner(s)

1 April 2022 Technical Interview of Examiner(s) cont'd

11 April 2022 Technical Interview of Examiner(s) Cont'd

12 April 2022 Technical Interview of Examiner(s) Cont'd

13 April 2022 Technical Interview of Examiner(s) Cont'd

18 May 2022 Assessment of action (including revised documentation) to address issues raised

20 June 2022 Assessment of action (including revised documentation) to address issues raised

28 June 2022 Final Review of updated documentation to address ISO/IEC 17024 + IECEx CoPC Scheme requirements

4 July 2022 Follow up Zoom meeting to close out final issues

12 July 2022 Final Review of updated Manuals and procedures to close out final issues.

July 2022 Independent Review of the Assessment Teams reports of ISO/IEC 17024 Checklist (OD 507), Site Assessment Report (From F004) and this Final Report to ExMC (Form F003), by Mr Paul Meanwell, IECEx Chair

Reporting on use of Remote provisions

A briefer version to previous

- **12 May 2018 to 23 May 2018 –** Assessment of Applicant ExCB documentation for compliance with ISO/IEC 17024 and IECEx Scheme Documents including reviews of corrected versions from issues raised
- **28 May 2018 –** Site visit conducted
- **31 May to 4 June 2018** – Review ad closure of Corrective actions and issue of final ExMC report

The important point is to briefly record when things were done to provide the IECEx Community with confidence that adequate time was allocated to conduct a thorough assessment

Accreditation and use of Checklists

- IECEx Rules require that the relevant ISO/IEC 17XXX Conformity Assessment Standard is to be met by the ExCB / ExTL for the relevant Schemes:
  - ISO/IEC 17065 – ExCBs for the IECEx 02 and 03
  - ISO/IEC 17021-1 – ExCBs auditing under IECEx 03-5 (Cl 10.1.1)
  - ISO/IEC 17025 – ExTLs for the IECEx 02 Scheme
  - ISO/IEC 17024 – ExCBs for the IECEx 05 CoPC Scheme

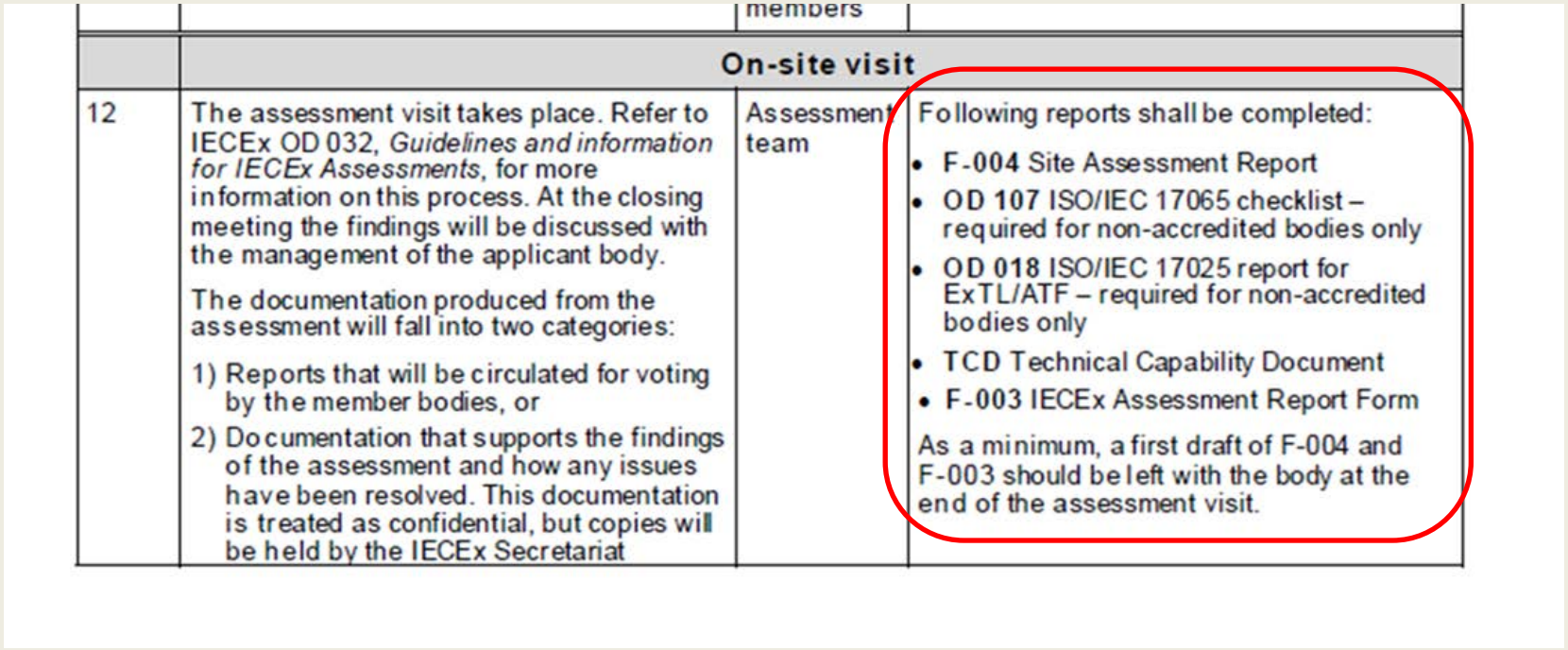
- Where National Accreditation DOES NOT exist for the above standards then the Assessment Team MUST assess for compliance with the ISO/IEC 17XXX Standard – For this purpose IECEx have the following Checklists
  - OD 107 = ISO/IEC 17065 Checklist
  - OD 018 = ISO/IEC 17025 Checklist
  - OD 507 = ISO/IEC 17024 Checklist

  - Available from https://www.iecex.com/publications/operational-od/

- Where National Accreditation DOES exist for the above standards then the Assessment Team ARE NOT required to complete the above Checklists BUT to confirm:
  - Currency and scope of accreditation
  - That the Accreditation Body is a member of the IAF or ILAC
  - That no major outstanding non conformances remain
  - IECEx Checklists maybe used to “spot” check if Assessment team have concerns

Accreditation and use of Checklists

Extract from IECEx OD 003-2 Section 1.3 Step 12



		members	
	On-site visit		
12	The assessment visit takes place. Refer to IECEx OD 032, *Guidelines and information for IECEx Assessments*, for more information on this process. At the closing meeting the findings will be discussed with the management of the applicant body. The documentation produced from the assessment will fall into two categories: 1) Reports that will be circulated for voting by the member bodies, or 2) Documentation that supports the findings of the assessment and how any issues have been resolved. This documentation is treated as confidential, but copies will be held by the IECEx Secretariat	Assessment team	Following reports shall be completed: • F-004 Site Assessment Report • OD 107 ISO/IEC 17065 checklist – required for non-accredited bodies only • OD 018 ISO/IEC 17025 report for ExTL/ATF – required for non-accredited bodies only • TCD Technical Capability Document • F-003 IECEx Assessment Report Form As a minimum, a first draft of F-004 and F-003 should be left with the body at the end of the assessment visit.

A Reminder of the importance to read and understand the respective rules and Operational Documents

Final Remarks

- Timely communication between Assessment Team – Body under Assessment – Secretariat

- Using LATEST IECEx forms – Assessors must check they are using the latest – despite temptation to cut and paste from old reports

- Role of Assessors to check that IECEx requirements are met. If an Assessor raises an issue they MUST show which requirement of which Rule or OD is not being met.

- While an Assessor may not fully like the way an ExTL or ExCB is conducting its work may, ask yourself, which rule of the IECEx is not being met.

- National Accreditation –
  - Provide CURRENT Copy of accreditation certificate + Scope
  - Refer to previous slide.

ExCB Management of CoC and QARs

To be covered by Geoff Slater – IECEx Compliance Manager

IEC SYSTEM FOR CERTIFICATION TO STANDARDS RELATING TO EQUIPMENT FOR USE IN EXPLOSIVE ATMOSPHERES (IECEx SYSTEM)

TECHNICAL CAPABILITY DOCUMENT
No. TCD – IEC 60079 and ISO 80079 Series
Edition 8.1 EXTRACT for 2022 Assessor Training Workshop

Referenced Standards

IEC 60079, ISO 80079-36 and 37, and ISO 16852 – Explosive atmospheres

Parts included: IEC 60079- 0, 1, 2, 5, 6, 7, 11, 13, 15, 16, 18, 26, 28, 29-1, 29-4, 30-1, 31, 32-2, 33, 35-1, 35-2, 40, 42, 46, 47, 62784 and ISO 80079-36, 37 and ISO 16852

Name of body:

Members of the assessment team

Name	Role

Place(s) of assessment:

Assessment date(s):

BEFORE DOING ANYTHING ELSE PLEASE READ SECTIONS 1 AND 2 AND BE SURE YOU UNDERSTAND THEM

Documentation Control

Edition	Date	Changes	Prepared by	Approved by
8.1	2021-11	• Corrected typo in standard reference under part 3 of item 20 IEC 60079-32-2.	ExMCWG2 convenor	N/A
8.0	2021	• Added "Correct application of ExTAG DS 2012/003" under Clause 26.4.5 Degree of protection (IP) by enclosures – dust test in IEC 60079-0, Clause 6.1.1.4 IP test in IEC 60079-31 • Added "Correct application of ExTAG DS 2015/011A" under Clause 26.5.1 Temperature measurement tests in IEC 60079-0, Clause 5.1.4 Maximum temperatures in IEC 60079-5, Clause 6.1.4 Maximum temperature in IEC 60079-6, Clause 10.2 Temperature tests in IEC 60079-11, Clause 8.2.2 Maximum temperature in IEC 60079-18, Clause 5.3 Temperature evaluation in IEC 60079-26, Clause 5.4.6 Temperature in IEC 60079-29-1, Clause 5.4.6 Temperature variation in IEC 60079-29-4, Clause 5.1.13 Determination of maximum sheath temperature in IEC/IEEE 60079-30-1,	ExMC WG2	ExMC Meeting via ballot on ExMC/1694/DV

Edition	Date	Changes	Prepared by	Approved by
		Clause 6.1.2 Thermal tests in IEC 60079-31, Clause 5.4.5.1 Temperature in IEC 62990-1 and Clause 8.2.1 of ISO 80079-36. • Added "Correct application of ExTAG DS 2020/003" under Clause 26.8 Thermal endurance to heat in IEC 60079-0. • Updated edition for IEC 60079-6 and added check of competence questions. • Added new editions of IEC 60079-7, IEC 60079-18 and IEC 60079-29-1. • Moved topic 'Non sparking low power'' in 'Check of competence' section from IEC 60079-15 to IEC 60079-7 and renamed "Alternative separation distances for Level of Protection "ec" equipment under controlled environments". • Added statement "Competency under this standard is considered to cover IEC 60079-25" under "Minimum testing capability" in IEC 60079-11. • Moved topic 'Enclosed break devices' in 'Check of competence' section from IEC 60079-15 to IEC 60079-1. • Added clarification under IEC 60079-1 that is it possible for ExTLs to have a scope limitation for 'da' only. • Made an exception for the minimum test equipment under Clause 10.1 of IEC 60079-11 for the carbonisation test. • Added new standards IEC TS 60079-47 and IEC 62990-1.		

Table of Contents

1 Purpose

The purpose of this Technical Capability Document (TCD) is to provide documented evidence that applicant and accepted ExTLs have the capability to assess and test equipment

according to their proposed or accepted scope of standards. It may also be used as a tool to assess and document the capability of ExCBs.

Completion of the TCD will be a collaborative process between the assessment team and the body being assessed. This will occur prior to and at the assessment visit. At the 2015 IECEx MC meeting it was agreed that the TCD will be completed fully at the initial application of an IEC ExTL/ExCB.

Unless otherwise stated by the assessment team, it is also assumed that if an ExCB or ExTL meets the requirements of the respective sections of this TCD, the ExCB or ExTL is also capable of meeting the requirements of older editions of standards.

The TCD does not cover all requirements of the IEC 60079 series of Standards but focuses on the most important requirements of the standards in order to establish that the necessary personnel knowledge and expertise, procedures, and the equipment are available. It is expected that the ExCB or ExTL under assessment will have self-assessed to the complete relevant standards as the assessor may explore areas not covered by this TCD.

Sections within the TCD contain duplication of information from previous sections. To simplify the use of the TCD, the user may put information in the first section/s and reference the section that has the full details.

2 How to complete this TCD

Each part of IEC 60079 in this TCD is split into 3 sections as follows:

2.1 Section 1 – Personnel:

This section is to identify the knowledge level of the ExCBs or ExTLs employees regarding the requirements and interpretations of the respective parts of the IEC 60079 series contained in this document.

Prior to the assessment, the body being assessed shall complete the first two columns for each standard in its scope to show the personnel deemed competent for that standard.

The rest of this section will normally be completed by the assessment team during the site assessment visit. But the body being assessed might also like to use it as a self-assessment tool.

Where the suggested questions or topics given in the personnel section for each standard require a specific numerical answer from the standard, it is acceptable if the person being questioned can readily find the appropriate answer from a copy of the standard. (that is, they are sufficiently familiar with the standard that they know immediately where to find the specific answer)

2.2 Section 2 - Procedures

This section is to identify the procedures used for carrying out the tasks related to IEC 60079 equipment series (assessment and testing). The knowledge of these procedures may be assessed in Section 1.

If there are any contracted or subcontracted tests, a procedure must be included that meets the subcontracting requirements of ISO/IEC 17025.

This section shall be initially completed by the ExCB/ExTL and submit to the Lead Assessor by the time specified prior to the assessment.

2.3 Section 3 – Equipment and tests:

This section is to identify the relevant tests for the part of the standard. It then looks, for each test, at the availability and adequacy of equipment, maintenance and calibration of the

equipment, and capability to perform the test correctly. It also includes provision for comments and photos. It is expected that test laboratories/certification bodies will have minimum testing equipment in-house or **an agreement/contract to borrow or rent testing equipment** along with operating procedures and trained personnel that will be able to fulfil the requirements of the tests.

The minimum testing equipment is denoted with an asterisk * throughout the TCD.

It is allowed to have an agreement/contract to borrow or rent for tests where the equipment is also available in-house, e.g., to solve capacity issues, or for those tests that are not indicated with an asterisk. A comment shall be provided in the TCD for those tests that are not performed in-house documenting the ExCB/ExTL's ability to select suitable contractors or subcontractors.

NOTE: Some examples when borrowing or renting may be used:

- Extremely large equipment that will not fit in an ExTL's IP5X/6X chamber
- Temperature testing of 'e' electrical motors that are beyond the capability of the ExTL's electrical power supply

The ExTL shall not borrow or rent test equipment for every test in a particular standard.

The ExTL and the owner of the borrowed or rented test equipment shall have an Agreement/Contract to establish the responsibilities for the calibration, use and maintenance of the equipment.

The ExTL shall have appropriate provisions to ensure that the transportation of the borrowed/rented test equipment will not affect the correct functioning of the equipment.

The IECEx Assessment Team shall verify the competence of the ExTL staff to properly use such equipment, as well as the compliance of this testing/measurement equipment with the applicable standard's requirements.

In cases when it is impractical to ship the borrowed or rented equipment to the ExTL facilities, for example, extra size of humidity chamber, it is permitted that the ExTL staff carries out the relevant testing/measurement at the facility of the owner of the borrowed or rented equipment.

It is expected that existing ExTLs will comply with this in-house requirement at their facilities within one year after the 2015 ExMC meetings, 2016-09-18. New ExTLs are expected to comply from the start.

Proficiency testing became mandatory for accepted IECEx ExTLs during 2015. When assessing existing ExTLs, assessors should check:

- Participate in relevant program(s);
- Has a copy of the report;
- Understand the report and their results; and
- Undertaken any improvement action from phase 1 and/or phase 2 or as required by the IECEx secretariat.

For initial assessments, assessors may require tests using proficiency testing artefacts to be demonstrated as part of the assessment. The results will be recorded within the TCD and on the respective site assessment report.

This section shall be completed by the ExCB/ExTL. This might include provision of information about the relevant equipment and electronic copies of photos. The assessment team will add information and photos about tests witnessed during the site visit in this section.

Note 1: Information and photos used to be in the site assessment report but are now included in the TCD.

Note 2: To add photos - It is best to use the 'insert' function as the photos will automatically fit the width of the cell

Definition of in-house. For the purpose of this document "in-house" means being within the ExTL and in associated laboratories (generally under the broader organisation) to which the ExTL has access both in terms of priority (ie. can get tests done when needed) and geography (ie. nearby).

NOTE: IECEx OD 03 contains additional information used to assist in interpretation of these requirements.

2.4 Completion of TCDs

All new applicants are to have a TCD completed as part of the original assessment. The Lead Assessor is to send the TCD to the applicant so it can be partly completed and forwarded to the assessment team with sufficient time for the assessor to review. At the time of the assessment, the respective parts of the TCD are to be completed between the assessment team and the applicant.

When the ExTL is not integral with the ExCB, section 3 shall be completed with comments indicating the ExTL(s).

Note: To make document smaller as a .docx file do the following
- select save as
- click 'tools' bottom middle
- choose 'Compress Pictures'
- click on 'Options'
- select both the top options under 'Compression options'
- selection 'email (96 ppi)' under Target output'
- Then click, 'OK', 'OK' and 'Save'

3 IEC 60079-0
Explosive atmospheres – Part 0: Equipment – General requirements

Edition(s) covered by this TCD
7.0

1. Personnel

Names of personnel deemed competent by the IECEx body being assessed for this standard	Abbreviation (e.g. initials) used below (if needed)	Interviewed (Y/N)

Check of competence (typical topics or questions to cover include):

- What is explosion protection?
- What are the equipment groups?
- What are EPLs?
- What is meant by ambient temperature?
- Temperature Classification
- External heating or cooling
- What is meant by service temperature?
- Can parts exceed the temperature class?
- Mechanical strength - materials and impact strength
- Stored energy and cooling time
- Circulating currents
- Retention of gaskets
- Various forms of energy - RF, Laser, Ultrasonic etc.
- Non-metallic materials - plastics, Elastomers, glass etc.
- Electrostatic charge - Group I, Group II and Group III
- Metallic parts - light alloys
- Fasteners
- Special fasteners
- Interlocks
- Bushings
- Cements
- Ex Components
- Connection facility, including creepage and clearance if necessary
- Earthing
- Entries into enclosure - entry holes and cable entry devices etc.
- Rotating machines
- Switchgear
- Fuses
- Plugs & sockets
- Luminaires
- Cells & batteries
- Documentation - drawings, instructions etc.
- Compliance
- Understanding of the application of Clause 6.6.4 Laser, Luminaires and other non-divergent continuous wave optical sources and the scope of IEC 60079-28 sufficiently to know if application of IEC 60079-28 is applicable”

Comments by IECEx Assessor:	

2: Procedures

Relevant procedures (to be listed by body under assessment):

Procedure title	No	Clause(s) covered

3: Equipment and Tests

Standard: IEC 60079-0 General Requirements		
Clause	**Requirement – Test**	**Result – Remark**
6.3	**Opening time test ***	
	Availability and adequacy of equipment	
	Maintenance and calibration	
	Capable of being performed correctly	
	Comments	
Photos		
6.3	**Capacitance discharge timing test ***	
	Availability and adequacy of equipment	
	Maintenance and calibration	
	Capable of being performed correctly	
	Comments	
17.2.1	**Ingress Protection – IP Code 1X-2X – Protected Against Solid foreign objects on ventilation openings ***	
	Availability and adequacy of equipment	
	Maintenance and calibration	
	Capable of being performed correctly	
	Comments	
Photos		
25	**Compliance of prototype or sample with documents ***	

Commented [AC1]: ExTL must have capability to perform tests that have an Asterix ("*") showing

Commented [AC2]: Photo of test equipment to be included

Standard: IEC 60079-0 General Requirements		
Clause	**Requirement – Test**	**Result – Remark**
	Availability and adequacy of equipment	Relevant equipment may be needed by the concept standard – e.g. measuring equipment for creepage and clearance in Ex i and Ex e, or measurement of flamepaths in Ex d. Also can include CTI test equipment when required by the concept standard.
	Maintenance and calibration	
	Capable of being performed correctly	
	Comments	
Photos		
26.4.2	**Resistance to impact ***	
	Availability and adequacy of equipment	
	Maintenance and calibration	
	Capable of being performed correctly	
	Comments	
Photos		
26.4.3	**Drop test ***	
	Availability and adequacy of equipment	
	Maintenance and calibration	
	Capable of being performed correctly	
	Comments	
Photos		
26.4.5	**Degree of protection (IP) by enclosures – dust test ***	
	Availability and adequacy of equipment	
	Maintenance and calibration	
	Capable of being performed correctly	
	Correct application of ExTAG DS 2012/003	
	Comments	
Photos		
26.4.5	**Degree of protection (IP) by enclosures – water test ***	
	Availability and adequacy of equipment	
	Maintenance and calibration	
	Capable of being performed correctly	
	Comments	
Photos		
26.5.1	**Temperature measurement tests ***	
	Availability and adequacy of equipment	
	Maintenance and calibration	
	Capable of being performed correctly	

Standard: IEC 60079-0 General Requirements		
Clause	**Requirement – Test**	**Result – Remark**
	Correct application of ExTAG DS 2015/011A	
	Comments	
Photos		
26.5.2	**Thermal shock test ***	
	Availability and adequacy of equipment	
	Maintenance and calibration	
	Capable of being performed correctly	
	Comments	
Photos		
26.5.3	**Small component ignition test (Group I and Group II)**	
	Availability and adequacy of equipment	
	Maintenance and calibration	
	Capable of being performed correctly	
	Comments	
Photos		
26.6	**Torque test for bushings ***	
	Availability and adequacy of equipment	
	Maintenance and calibration	
	Capable of being performed correctly	
	Comments	
Photos		
26.8	**Thermal endurance to heat ***	
	Availability and adequacy of equipment	
	Maintenance and calibration	
	Capable of being performed correctly	
	Correct application of ExTAG DS 2020/003	
	Comments	
Photos		
26.9	**Thermal endurance to cold ***	
	Availability and adequacy of equipment	
	Maintenance and calibration	
	Capable of being performed correctly	
	Comments	
Photos		
26.10	**Resistance to UV light**	
	Availability and adequacy of equipment	
	Maintenance and calibration	
	Capable of being performed correctly	
	Comments	
Photos		

Standard: IEC 60079-0 General Requirements		
Clause	**Requirement – Test**	**Result – Remark**
26.11	**Resistance to chemical agents for Group I equipment ***	
	Availability and adequacy of equipment	
	Maintenance and calibration	
	Capable of being performed correctly	
	Comments	
Photos		
26.12	**Earth continuity ***	
	Availability and adequacy of equipment	
	Maintenance and calibration	
	Capable of being performed correctly	
	Comments	
Photos		
26.13	**Surface resistance test of parts of parts of enclosures of non-metallic materials ***	
	Availability and adequacy of equipment	
	Maintenance and calibration	
	Capable of being performed correctly	
	Comments	
Photos		
26.14	**Measurement of capacitance ***	
	Availability and adequacy of equipment	
	Maintenance and calibration	
	Capable of being performed correctly	
	Comments	
Photos		
26.15	**Verification of ratings of ventilating fans**	
	Availability and adequacy of equipment	
	Maintenance and calibration	
	Capable of being performed correctly	
	Comments	
Photos		
26.16	**Alternative qualification of elastomeric sealing O-rings**	
	Availability and adequacy of equipment	
	Maintenance and calibration	
	Capable of being performed correctly	
	Comments	
Photos		
26.17	**Transferred charge test ***	
	Availability and adequacy of equipment	
	Maintenance and calibration	

Standard: IEC 60079-0 General Requirements		
Clause	**Requirement – Test**	**Result – Remark**
	Capable of being performed correctly	
	Comments	
Photos		
A.3.1	**Tests of clamping of non-armoured and braided cables ***	
	Availability and adequacy of equipment	
	Maintenance and calibration	
	Capable of being performed correctly	
	Comments	
Photos		
A.3.2	**Tests of clamping of armoured cables ***	
	Availability and adequacy of equipment	
	Maintenance and calibration	
	Capable of being performed correctly	
	Comments	
Photos		

Minimum testing capability

Where none of the concept standards included in the scope of the ExTL requires the capability for any particular test above, the ExTL does not need to have the testing equipment in-house or demonstrate the capability for that test.

END OF EXTRACT FOR TRAININGN PURPOSES. COMPLETE TCD IS AVAILABLE FROM www.iecex.com/members-area/documents/tcds/