**Technical Capability Document**

**No. TCD – IEC 60079-17**

**IECEx 03-4, IECEx Certified Service Facilities Scheme – Inspection and Maintenance**

**Edition 1.0**

*Document History*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Edition | Date | Changes | Prepared by | Approved by |
| 1.00 | May 2021 | Initial issue | ExSFC | ExSFC Meeting #07 |

**Referenced Standards**

IEC 60079 -14:2013, Edition 5.0, Explosive atmospheres - Parts 14: Electrical installations design, selection and erection.

IEC 60079 -17:2013, Edition 5.0, Explosive atmospheres - Parts 17: Electrical installations inspection and maintenance.

IEC 61892-7:2019, Edition 4.0, Mobile and fixed offshore units – Electrical installations – Part 7: Hazardous areas.

ISO/IEC 17065:2012, Conformity assessment — Requirements for bodies certifying products, processes and services.

ISO/IEC 17020:2012, Conformity assessment — Requirements for the operation of various types of bodies performing inspection.

ISO/IEC 17021-1:2015, Conformity assessment — Requirements for bodies providing audit and certification of management systems — Part 1: Requirements

Note 1: Standard IEC 60079-14 implementation in this TCD is limited to initial inspection requirements only and will be expanded by others in a separate TCD to include design, selection and erection requirements.

Note 2: IEC 61892-7 is only valid for applicant CBs with inclusion of scope for offshore facilities.

Note 3: A separate TCD is available for IEC 60079 Part 19 by ExMC WG2 & ExSFC.

**Name of body:**

**Members of the assessment team**

|  |  |
| --- | --- |
| **Name**  | **Role**  |
|  |  |
|  |  |
|  |  |

**Place(s) of assessment:**

|  |  |
| --- | --- |
|  |  |

**Assessment date(s):**

**Table of Contents**

[1 Purpose 4](#_Toc56773914)

[2 How to complete this TCD 4](#_Toc56773915)

[2.1 ExCB Personnel - Technical competence 4](#_Toc56773916)

[2.1.1 IEC 60079 series general Ex technical competence 4](#_Toc56773917)

[2.1.2 IEC 60079-14 technical competence: 5](#_Toc56773918)

[2.1.3 IEC 60079-17 technical competence: 5](#_Toc56773919)

[2.1.4 IEC 61892-7 technical competence: 5](#_Toc56773920)

[2.2 ExCB Personnel - Assessment competence 5](#_Toc56773921)

[2.2.1 ISO/IEC 17065 competence: 5](#_Toc56773922)

[2.2.2 ISO/IEC 17020 competence: 5](#_Toc56773923)

[2.2.3 ISO/IEC 17021-1 competence: 6](#_Toc56773924)

[2.3 ExCB Procedures: 6](#_Toc56773925)

[2.3.1 ExCB assessment of Service Facility Personnel: 6](#_Toc56773926)

[2.3.2 ExCB assessment of Service Facility Quality Management System (QMS): 6](#_Toc56773927)

[2.3.3 ExCB assessment of Service facility equipment and tests: 7](#_Toc56773928)

[Annex A 8](#_Toc56773929)

[ExCB Personnel - Specification of technical competence 8](#_Toc56773930)

[Annex B 11](#_Toc56773931)

[ExCB Personnel - Specification of assessment competence 11](#_Toc56773932)

[Annex C 13](#_Toc56773933)

[ExCB Procedures 13](#_Toc56773934)

# Purpose

The purpose of this Technical Capability Document (TCD) is to provide documented evidence that applicant ExCB has the capability to assess service facilities providing inspection services according to the service facility’s proposed or accepted scope of capability.

The TCD replaces the TGD 60079-17 referenced in IECEx OD 316-4.

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 include assessment capability and will be completed fully at the initial application of an IEC ExCB. At the 5 years reassessment, the secretariat will send the TCD that is on file to the ExCB to update in time for the reassessment. For bodies that have not previously completed the TCD, they will be asked by the secretariat to complete it before the next full reassessment. More details are given later.

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

The TCD does not cover all requirements of the IEC 60079-14, IEC 60079-17 and IEC 61892-7 standards, but focuses on the most important requirements of the standards in order to establish that the necessary personnel knowledge and expertise exists within the ExCB to assess service facility procedures, processes, personnel competence and equipment available. It is expected that the ExCB 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.

Note: Standard IEC 60079-14 implemented in this TCD is limited to initial inspection requirements only.

# How to complete this TCD

All new applicants ExCBs shall have a TCD completed as part of the original assessment. The Secretariat shall 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 shall be completed between the assessment team and the applicant.

This TCD is split into 3 main sections with subsections as follows:

## ExCB Personnel - Technical competence

### IEC 60079 series general Ex technical competence

This section is to identify the knowledge level of the ExCB’s employees regarding the general requirements and interpretations of IEC 60079 standard series contained in this document.

Prior to the assessment, the body being assessed shall assess each individual nominated by the ExCB as an auditor of Ex Service Facility.

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

### IEC 60079-14 technical competence:

This section is to identify the knowledge level of the ExCB’s employees regarding the requirements and interpretations of IEC 60079-14 contained in this document.

Prior to the assessment, the body being assessed shall assess each individual nominated by the ExCB as an auditor of Ex Service Facility taking into account as a minimum the requirements of competency detailed in Annex A.

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

### IEC 60079-17 technical competence:

This section is to identify the knowledge level of the ExCB’s employees regarding the requirements and interpretations of IEC 60079-17 contained in this document.

Prior to the assessment, the body being assessed shall assess each individual nominated by the ExCB as an auditor of Ex Service Facility taking into account as a minimum the requirements of competency detailed in Annex A.

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

### IEC 61892-7 technical competence:

This section is to identify the knowledge level of the ExCB’s employees regarding the requirements and interpretations of IEC 61892-7 contained in this document.

Prior to the assessment, the body being assessed shall assess each individual nominated by the ExCB as an auditor of Ex Service Facility taking into account as a minimum the requirements of competency detailed in Annex A.

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

Note: IEC 61892-7 is only valid for applicant CBs with inclusion of scope for offshore facilities.

## ExCB Personnel - Assessment competence

### ISO/IEC 17065 competence:

This section is to identify the knowledge level of the ExCB’s employees regarding the requirements and interpretations of ISO/IEC 17065 contained in this document.

Prior to the assessment, the body being assessed shall assess each individual nominated by the ExCB as an auditor of Ex Service Facility taking into account as a minimum the requirements of competency detailed in Annex B.

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

### ISO/IEC 17020 competence:

This section is to identify the knowledge level of the ExCB’s employees regarding the requirements and interpretations of ISO/IEC 17020 contained in this document.

Prior to the assessment, the body being assessed shall assess each individual nominated by the ExCB as an auditor of Ex Service Facility taking into account as a minimum the requirements of competency detailed in Annex B.

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

### ISO/IEC 17021-1 competence:

This section is to identify the knowledge level of the ExCB’s employees regarding the applicable requirements and interpretations of ISO/IEC 17021-1 contained in this document.

Prior to the assessment, the body being assessed shall assess each individual nominated by the ExCB as an auditor of Ex Service Facility taking into account as a minimum the requirements of competency detailed in Annex B.

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

## ExCB Procedures:

This section is to identify the procedures used for carrying out the assessment of service facilities related to IEC 60079-14 (initial inspection only), IEC 60079-17 and IEC 61892-7 as detailed in the following subclauses.

Prior to the assessment, the body being assessed shall identify procedures covering all applicable clauses of ISO/IEC 17021 and ISO/IEC 17065. For the purpose of identifying procedures related to ISO/IEC 17065, the checklist IECEx OD 107 should be used. Additional procedures covering ISO/IEC 17021 and other relevant requirements of the IECEx 03-4 Scheme should be listed in Annex C.

Special consideration should be taken to identify procedures covering the following subclauses.

### ExCB assessment of Service Facility Personnel:

This section is to identify the procedures of the ExCB to assess the knowledge level of the service facility employees regarding the requirements and interpretations of the respective parts of the ISO and IEC standards contained in this document.

Prior to the assessment, the body being assessed shall identify procedures for the assessment of competency of service facility personnel as required in IEC 60079-17 Section 4.

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

Note: Reference should be made to the requirements set forth in IECEx OD 504, Units of competence Ex 004, Ex 007 and Ex 008.

### ExCB assessment of Service Facility Quality Management System (QMS):

This section is to identify the procedures of the ExCB to assess the validity and effectiveness of procedures and processes used by a service facility for carrying out the tasks related to inspection and maintenance services as detailed in its scope.

Prior to the assessment, the body being assessed shall identify procedures for the assessment of QMS of a service facility for applicable requirements for inspection and maintenance according to ISO/IEC 17020.

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

### ExCB assessment of Service facility equipment and tests:

This section is to identify the procedures of the ExCB to identify together with the service facility the equipment relevant for the service facility scope and applicable parts of the relevant standards. This includes assessment of the availability and adequacy of equipment, maintenance and calibration of the equipment, and capability to perform the test correctly.

It is expected that the ExCB will understand the minimum test and measurement equipment required by the service facility to meet the service facility scope for inspection and maintenance.

1.

# ExCB Personnel -Specification of technical competence

|  |
| --- |
| Edition(s) covered by this TCD |
| IEC 60079 Series (general knowledge)IEC 60079-14:2013IEC 60079-17:2013IEC 61892-7:2019 |

**Nominated ExCB personnel**

|  |  |  |
| --- | --- | --- |
| Names of personnel deemed competent by the IECEx ExCB to assess an Ex Service Facility for this standard | Abbreviation (eg initials) used below (if needed) | Interviewed (Y/N) |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
| Items of competence |
| IEC 60079 Series |
| Check of competence (typical topics to cover include): | Comments by IECEx Assessor |
| * Standard atmospheric conditions
* Types of equipment protection
* Zones for explosive gas and dust
* What are EPLs?
* What are the equipment groups?
* Normal ambient temperature for Ex equipment
* What is meant by service temperature?
* Maximum surface temperature
* Avoidance of electrostatic charge
* Ex Components
* Entries into enclosure - entry holes and cable entry devices etc.
* Rotating machines ventilation/cooling
* Degree of protection (IP) by enclosures
* Ex marking for explosive gas areas
* Ex marking for explosive dust areas
* Specific Conditions of Use “X”
* User instructions
 |  |
| **IEC 60079-14 – Electrical installations (related to initial inspection only)** |
| Check of competence (typical topics to cover include): | **Comments by IECEx Assessor** |
| * General requirements
* Environmental conditions
* Documentation - drawings, instructions etc.
* Responsibility & authority of Responsible Person
* Competence of Responsible Person
* Competence of operatives
* Safe work procedures
* Initial inspection of Ex Equipment and installation
* Spare part validation
* Equipment specific inspection schedules
* Service facility records for initial inspections
 |  |
| **IEC 60079-17 – Inspection and maintenance** |
| Check of competence (typical topics to cover include): | **Comments by IECEx Assessor** |
| * Responsibility & authority of Responsible Person
* Competence of Responsible Person
* Competence of operatives
* Why should inspections be independent of maintenance?
* Verification of unmarked equipment
* Acceptance of equipment in old installations
* What are the 3 grades of inspections?
* Types of inspection
* Inspection of fixed installations vs movable equipment.
* Maintenance requirements
* Replacement parts
* Lamp replacement (including EOL effect)
* Environmental conditions
* Requirements for withdrawal from service
* Procedures for isolation of equipment
* Intrinsically safe live maintenance
* General inspections schedules
* Inspection schedules specific for type of protection
* Typical motor checks
* Service facility records for inspections
 |  |
| **IEC 61892-7 – Mobile and fixed offshore units** |
| Check of competence (typical topics to cover include): | **Comments by IECEx Assessor** |
| * Gas detection and ESD systems
* Cable splicing
* Cable armour (including earthing of)
* Use of drain gland/plug in naturally ventilated areas
* Isolation of apparatus
* Use of ignition sources
* Personnel qualifications
* Documentation for site, equipment, and installation
 |  |

1.

# ExCB Personnel -Specification of assessment competence

|  |
| --- |
| Edition(s) covered by this TCD |
| ISO/IEC 17065:2012ISO/IEC 17020:2012ISO/IEC 17021-1:2015 |

**Nominated ExCB personnel**

|  |  |  |
| --- | --- | --- |
| Names of personnel deemed competent by the IECEx ExCB to assess an Ex Service Facility for this standard | Abbreviation (eg initials) used below (if needed) | Interviewed (Y/N) |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
| Items of competence |
| ISO/IEC 17065 |
| Check of competence (typical topics to cover include): | Comments by IECEx Assessor |
| * Certification agreements
* Impartiality
* Confidentiality
* Why an application review shall be conducted
* Certification documentation
* Surveillance
* Nonconformities
* Records
 |  |
| ISO/IEC 17020 |
| Check of competence (typical topics to cover include): | Comments by IECEx Assessor |
| * Technology used for delivery of inspection services
* Deficiencies in the delivery of services
* Deviations
* Selection, training, formal authorization, and monitoring of inspectors
* Suitability and calibration status of equipment used for conducting inspections
* Inspection records
* Inspection reports
 |  |
| ISO/IEC 17021-1 |
| Check of competence (typical topics to cover include): | Comments by IECEx Assessor |
| * Responsibilities of the client and certification body
* Risk-based approach
* Selection, training, formal authorization, and monitoring of auditors re Annex A ISO/IEC 17021-1
* Certification documents
* Information exchange
* Application review
* Audit programme
* Audit planning
* Initial certification audits
* Conducting audits
* Audit report
* Nonconformities
* Corrections and corrective actions
* Surveillance
* Recertification
 |  |

1.

# ExCB Procedures

Relevant procedures not covered by checklist for ISO/IEC 17065 (IECEx OD 107), that relate to IECEx03-4, OD 313-4 and OD 314-4

to be listed by body under assessment:

|  |  |  |
| --- | --- | --- |
| **Procedure title**  | **No** | **Clause(s) covered** |
|   |  |   |
|   |  |   |
|  |  |  |
|  |  |  |
|  |  |  |
|   |  |   |
|   |  |   |
|   |  |   |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |