IEC System for Certification to Standards relating to Equipment for use in Explosive Atmospheres (IECEx System)

IECEx Certified Service Facilities Scheme – Part 3: Ex installation and initial inspection

Quality Management System requirements for IECEx Service Facilities providing Ex installation and initial inspection service
IECEx OPERATIONAL DOCUMENT

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Operational Document IECEx OD 314-3 –

IECEx Certified Service Facilities Scheme –
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Quality Management System requirements for IECEx Service Facilities providing Ex installation and initial inspection service

FOREWORD

This document is the Operational Document IECEx OD 314-3 - Quality Management System requirements for the Certified Service Facilities Scheme – Part 3: Ex installation and initial inspection (“IECEx 03-3 Scheme”) to provide specifies a mechanism for organizations that provide Ex installation and initial inspection services meeting the requirements of IEC 60079-14 and IEC 60079-17 the ability to obtain IECEx Certification under the IECEx System.

A listing of currently approved ExCBs is maintained on the IECEx website: www.iecex.com.

Document History

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INTRODUCTION

This Operational Document is supplementary to the Operational manuals and procedures operated by IECEx Certification Bodies (ExCBs), approved by the IECEx Management Committee to Issue IECEx Certificates of Conformity to Ex Service Facilities providing an Ex Installation and Initial Inspection Service according to IEC 60079-14 and IEC 60079-17.

The IECEx Certified Service Facilities Scheme is modelled on the IECEx Certificate of Conformity Scheme, which is an ISO Type 5 Certification System.

The purpose of the Operational Document is to ensure that each ExCB, accepted by ExMC for the purposes of issuing IECEx Certified Service Facility Certificates, processes applications from Installation and Initial Inspection Service Facilities with the same approach and technical or management requirements, known as certifying the IECEx way.

For Ex installation or initial inspection, a certified installation Ex Service Facility should be capable of installing and inspecting equipment of any Ex technique type of protection. (If not permanently employed, Ex competent personnel for a particular technique type of protection may need to be engaged for a particular contract application).

The preparation of this IECEx Operational Document has been done so with the aim of alignment with various ISO or IEC International Standards, ISO and Guides, and IECEx Rules of Procedures, including but not limited to the following:

- **NOTE** Although this IECEx Operational Document makes reference to IEC 60079-14 and IEC 60079-17, it is also relevant in determining ability to work with other international, national or regional requirements of a similar nature, such as IEC 61892-7 - Mobile and fixed offshore units – electrical installations – Part 7: Hazardous areas.
- IECEx 03-0, IECEx Certified Service Facilities Scheme – Part 0: General Rules of Procedure
- IECEx 03-3, IECEx Certified Service Facilities Scheme – Part 3: Ex installation and initial inspection – Rules of Procedure
- IEC 60079-14, Explosive atmospheres – Part 14: Electrical installations design, selection and erection
- IEC 60079-17, Explosive atmospheres – Part 17: Electrical installations inspection and maintenance
- IEC 60079 Series as relevant or as referenced from IEC 60079-14, for example IEC 60079 – Parts 10-1, 10-2, 13, 19, 26, 28, 29-1, 29-4, 30-1, 30-2, 32-1, 43 or 46
- ISO/IEC 17000, Conformity assessment – Vocabulary and general principles
- ISO/IEC 17011, Conformity assessment – General requirements for accreditation bodies accrediting conformity assessment bodies
- ISO/IEC 17020, Conformity assessment – Requirements for the operation of various types of bodies performing inspection
- ISO/IEC 17021, Conformity assessment – Requirements for bodies providing audit and certification of management systems
- ISO/IEC 17021-1, Conformity assessment – Requirements for bodies providing audit and certification of management systems
- ISO/IEC -17065, Conformity assessment – Requirements for bodies certifying products, processes and services
- ISO .19011, Guidelines for auditing management systems
- ISO -Guide 27, Guidelines for corrective action to be taken by a certification body in the event of misuse of its mark of conformity
This procedure IECEx OD 314-3 often refers to IECEx OD 025, *Guidelines on the management of assessment and surveillance programs for the assessment of manufacturer’s quality system*, in accordance with the IECEx Scheme.

Although this Scheme relates to Service Facilities, many of the elements of IECEx OD 025 are applicable, as such this Operational Document is applicable at a number of steps in this procedure.
1 General

This Operational Document sets out the Quality Management System (QMS) requirements that an Ex Service Facility shall conform to in order to gain and maintain IECEx Certification as an IECEx Certified Service Facility, involved only in Ex Installation and initial inspection.

It also sets out the requirements for IECEx Certification Bodies (ExCBs), approved by the IECEx Management Committee to issue IECEx Certificates of Conformity to Service Facilities concerning the assessment of Service Facilities for their compliance to these requirements.

These requirements also form the basis of surveillance of IECEx Certified Service Facilities by ExCBs.

While Certification of the Quality Management System (QMS) to relevant standards is not a requirement of the IECEx Scheme, a Service Facility with this may find it of benefit in assisting them to meet the requirements of this Operational Document.

In using ISO 9001 as the basis for this Operational Document, the following requirements replace, add to or are more specific than those required by ISO 9001. The clause references used in this Operational Document have been adopted from ISO 9001:2008 as the most current standard.

NOTE Requirements set forth in ISO 9001:2015 and ISO/IEC 80079-34 are under consideration by IECEx ExMC and ExSFC.

2 Definitions

2.1 Ex Service facility

see IECEx 03-3

NOTE 1 Ex Service Facility is a term used by IECEx and in the context of this IECEx OD 314-3 shall include apply to an organization that carries or controls such stages in Ex installations and initial inspection, as required by IEC 60079-14 and IEC 60079-17.

NOTE 2 An Ex Service Facility may have restrictions on the type of Ex equipment, Ex types of protection techniques, ratings and size which will be covered by their limitation of scope.

2.2 Ex equipment

see IECEx 02

3 Application

This IECEx Operational Document shall be applied by ExCBs, approved by the IECEx Management Committee to issue IECEx Service Facility Certificates.

The Quality Management System (QMS) requirements below are based on the relevant requirements of ISO 9001 as amended or added to.
ExCBs shall manage their quality management system auditing, for the IECEx Certified Service Facility Program using IECEx OD 025 as a basis, which covers:

- Audit planning
- Auditor competence
- Duration for surveillance audits
- Audit reporting
- Others

On-going certification maintenance by the ExCB issuing the IECEx Service Facility Certificate shall consist of the following:

a) **Annual surveillance**: On-site surveillance audits at the location(s) where the Certified Ex Service Facility manages their service activities shall be conducted at not more than 12 monthly intervals, for which a FAR shall be issued in accordance with IECEx OD 313-3 (this is a shorter duration than specified in OD 025 and considered necessary given the criticality of Ex Installation and Initial Inspection procedures).

b) **Re-assessment**: Conducted as part of every third annual surveillance audit and shall include the full review of a Service Facility’s documented procedures.

### 3.1 Documentation requirements

#### 3.1.1 General

The Ex Service Facility shall develop a process plan to establish verification of the Ex Installation and initial inspection processes to the requirements of IEC –60079-14 and IEC 60079-17. In particular, prior to implementation of any changes to workshop practices, processes or materials, the Service.

All Ex installation and initial inspection performed by the Ex Service Facility requires documented procedures and or work instructions and shall be defined in their scope of IECEx Certified Service Facility Certification.

During the surveillance audits, ExCBs are required to assess identified changes.

**NOTE** National regulations may require certain records to be kept for a minimum period from the date of delivery.

#### 3.1.2 Records

The following requirements are additional to those of ISO 9001, Clause 4.2.4:

Records must be kept of serviced Ex equipment and Ex installation that is serviced in conformity installed or inspected with the requirements of this IECEx OD 314-3, and IEC –60079-14 and IEC 60079-17.

Also, records must be kept of Ex installations and equipment that, even after being serviced, Ex installation or inspection do not comply with the requirements of this IECEx OD -314-3, and IEC –60079-14 or IEC 60079-17.

As a minimum, records shall be kept for 10 years.

#### 3.2 Management responsibility

The following requirements are additional to those of ISO 9001, Clause 5:

The top management shall establish a mechanism to ensure that there is at least one person appointed to deputize when necessary for the management representative in matters relating to the scope of work covered by the IECEx Certificate of Conformity for the Ex Service Facility.

The responsibilities and authorities of the management representative and any deputies shall be documented. The ExCB shall be notified of any changes to the personnel appointed as the Responsible Person, according to IEC –60079-14 and IEC 60079-14.
3.3 Resource management
The following requirements are additional to those of ISO 9001, Clause 6:

The Ex Service Facility shall provide for training of all personnel performing activities affecting the repair and overhaul installation and inspection process. Ex competent persons, performing assigned tasks shall be qualified on the basis of appropriate education, training and experience, as defined in IEC 60079–14 and IEC 60079–17. Appropriate training and refreshment courses records shall be maintained.

Competent persons, including responsible persons and operatives (installers and inspectors), shall maintain their competence, with ExCBs required verifying the currency of the competence of Ex competent persons as part of the on-going surveillance of the Ex Service Facility.

The Ex Service Facility shall establish and maintain a Competence Management System that includes the evaluation of personnel for compliance with the requirements of IEC 60079-14 and IEC 60079-17 for responsible persons and operatives. The Competence Management System shall cover the scope of work undertaken by the Ex Service Facility and geographic application relating to sites.

NOTE 1 Attention is drawn to the specific requirements relating to different geographic locations and applicable external influences.

NOTE 2 Evidence of competence can be provided by having personnel certified to the applicable Units of Competencies Ex-003 (Install explosion-protected equipment and wiring systems), Ex-006 (Test electrical installations in or associated with explosive atmospheres) and Ex-008 (Perform detailed inspection of electrical installations in or associated with explosive atmospheres) of IECEx OD 504 (Specification for Units of Competency Assessment Outcomes).

3.4 Product realization
The following requirements are additional to those of ISO 9001, Clause 7:

The Ex Service Facility shall establish specific procedures or work instructions for Ex installation and initial inspection. These procedures or work instructions shall consider each process covered under the scope of the IECEx Service Facility Certificate to the requirements of IEC 60079-14 and IEC 60079-17, in accordance with the parameters listed below:

- Type of Ex service offered;
- Measurement/test/inspection facilities available;
- Activities to address any recall of product after installation, should the Service Facility become aware of any critical or major defect after the installed product has been released. Such procedures shall provide for the notification to the ExCB of the problem and to national authorities, e.g. Mining Regulators for Group I
- Details and evidence of Ex competence for responsible persons and operatives nominated as Ex Competent Persons;
- Sub-contractor activities, if any.

3.5 Measurement, analysis and improvement
The following requirements are additional to those of ISO 9001, Clause 8:

3.5.1 Planning
Clause 8.1 of ISO 9001 applies with the following exceptions:

Improvements are not within the scope of this IECEx OD 314-3 Operational Document. They may be made at the discretion of the Ex Service Facility, but the provisions of 3.2 shall apply at all times.

3.5.2 Customer satisfaction
Clause 8.2.1 of ISO 9001 is replaced by the following requirement:
For the purpose of this Operational Document, ‘customer satisfaction’ is in relation to the Ex Service Facilities compliance with the relevant requirements of IEC 60079-14 and IEC 60079-17. However, additional measures of customer satisfaction according to ISO 9001 are encouraged.

3.5.3 Internal audit
Clause 8.2.2 of ISO 9001 and the following applies:

The audit program shall address the effectiveness of the elements of the Quality Management System (QMS) as described in this document to ensure that the Ex installation and initial inspection processes are in conformity with IEC 60079-14 and IEC 60079-17. The period between audits should normally not exceed 12 months.

3.5.4 Monitoring and measurement of processes
The following requirement is additional to those of ISO 9001, Clause 8.2.3:

Where an installation or initial inspection process can affect the integrity, safety or functionality of an Ex type of protection or an Ex equipment, and where the resulting integrity cannot be verified after installation e.g. the environmental conditions required for curing an encapsulant, that specific process shall be measured or monitored and documentary evidence shall be maintained to demonstrate compliance with required parameters.

3.5.5 Monitoring and measurement of product
The following requirement is additional to those of ISO 9001, Clause 8.2.4:

Where tests are required, they shall be performed as specified in IEC 60079-14 or IEC 60079-17 with no sampling techniques being permitted, according to IEC 60079-14 or IEC 60079-17 provisions and requirements.

The Ex Service Facility shall have access to appropriately calibrated instruments and measuring devices that enable the tests and measurements required by IEC 60079-14 or IEC 60079-17 to be carried out.

3.5.6 Control of non-conforming product
The following requirements are additional to those of ISO 9001, Clause 8.3:

• The Ex Service Facility shall have a process such that the customer or owner can be identified in the event of the installation later being found not to be complying with IECEx requirements.

The Ex Service Facility shall take action, appropriate to the degree of risk significance, associated with Ex equipment and Ex installation, which has been found during Ex installation or following Ex initial inspection to be non-conforming.

• The Service Facility shall liaison with the ExCB responsible for the issue of the IECEx Service Facility Certificate of Conformity.

For all non-conforming installations, the Ex Service Facility shall maintain records of:

• Identification of the Ex installation and or initial inspection;

• The customer who received the Ex installation and or initial inspection;

• The action taken to inform the organization responsible for the Ex installation and or initial inspection, and the relevant ExCB;

• The action taken to implement corrective and preventative action;

• Actions and communications taken with a relevant regulator (whenever applicable).

3.5.7 Analysis of data
Clause 8.4 of ISO 9001 applies.

3.5.8 Improvement
Clause 8.5.1 of ISO 9001 applies.
3.5.9 Corrective action
Clause 8.5.2 of ISO 9001 applies.

3.5.10 Preventive action
Clause 8.5.3 of ISO 9001 applies.

4 Preliminary requirements for ExCB assessment of Ex Service Facilities

As a pre-requisite, it shall be established that the Ex Service Facility satisfies the requirements of IEC 60079-14 and IEC 60079-17 in terms of adequate facilities, equipment and personnel to perform the scope of work to be covered by the IECEx Certified Service Facility Certificate.

5 Preliminary visit (optional)

Prior to an on-site assessment at the location(s) where the Certified Ex Service Facility manages their service activities, a preliminary visit may be conducted by the ExCB, where requested by the Applicant Service Facility. This preliminary visit may also serve as a “gap analysis”. Such activity is usually conducted on a fee for service basis.

6 ExCB auditor expertise

The ExCB’s audit of the location(s) where the Certified Ex Service Facility manages their service activities shall be performed by person or persons that have an expertise comparable to the scope of application of the Ex Service Facility, including Quality Management Systems (QMS).

7 On-site assessment

The on-site assessment at the location(s) where the Certified Ex Service Facility manages their service activities will be conducted by an ExCB to verify compliance with IEC 60079-14 and the IECEx Scheme requirements, e.g. this IECEx OD 314-3.

In addition to the general requirements of the IECEx Scheme, the IECEx Service Facility Certificate will be issued subject to the conditions specified on the rules governing this Scheme and on the basis of a satisfactory assessment by the ExCB.

Refer to Operational Document IECEx OD 313-3 for further details.

8 Process assessment by ExCBs

This Section identifies the critical areas that ExCBs shall be included in the assessment and surveillance of Ex Service Facilities seeking to obtain and maintain IECEx Service Facility Certification.

8.1 Compliance with IEC 60079-14 and IEC 60079-17

ExCBs shall assess the Ex Service Facility’s procedures and processes for compliance to the relevant requirements of IEC 60079-14 and IEC 60079-17.

This shall include assessment of the Ex Service Facility’s installation, test and inspection and test plans and work procedures for compliance with IEC 60079-14 and IEC 60079-17 and verification that such installation, test and inspection and test plans and work procedures clearly define the method for service checklist verification and for pass/fail and acceptance criteria.

8.2 Use of subcontractors

ExCBs shall assess the method of control the Ex Service Facility maintains over any subcontractor used to perform part of the installation and initial inspection process, including testing and calibration activities.

The Ex Service Facility agrees to arrange for the ExCB to evaluate relevant documentation and to arrange a visit to any subcontractor that the ExCB deems warranted. Subcontractors conducting operations that have the potential to impact on compliance with IEC 60079-14 and IEC 60079-17 shall be subject to audit by the ExCB.
Subcontracting by Ex Service Facilities shall be clearly defined in agreements between the ExCB and the Ex Service Facility and the ExCB and the Subcontractor or, by delegation of the ExCB, directly between the Ex Service Facility and the Subcontractor.

The scope of activity is an integral part of such agreements as well as evidence of competence of the Subcontractor (e.g. certificates, initial and annual audits by the ExCB). The overall responsibility remains in any case with the ExCB which certified the Service Facility.

Agreements mentioned above shall be registered by the IECEx Secretariat.

NOTE 1—Subcontracting activities shall be used on a limited basis, mainly in cases where the investments for such activities are rather high and volume for such work at the Ex Service Facility rather low.

NOTE 2—Subcontracting activities related to the main scope of selection of Ex installations and initial inspection, indicated in the IECEx Certificate, is not allowed.

8.3 Assessment of competence for operatives and responsible persons

The ExCB shall evaluate the Ex Service Facility’s mechanism for verification of current competencies of their nominated Ex Competent Persons, including the responsible person and operatives. Responsible persons and Operatives and responsible persons shall satisfy the competence requirements of IEC 60079-14, Annex F and IEC 60079-17.

For Ex Competent Persons having a Certificate of Personnel Competencies (CoPC) according to IECEx OD 504, Units of Competence: Ex 003 (Install explosion-protected equipment and wiring systems), Ex – 006 (Test electrical installations in or associated with explosive atmospheres) and Ex – 008 (Perform detailed inspection of electrical installations in or associated with explosive atmospheres), or having any other evidence of appropriate assessment and demonstration of Competencies based on IEC 60079-14 or IEC 60079-17, the ExCB shall verify that the certified or assessed scope of Ex activities covers the actual activities within the Ex Service Facility.

Those qualifying as Ex Competent Persons shall be identified in the Ex Service Facility’s documented system, along with their scope of activity.

An Ex Service facility certificate remains valid only while the Ex competent person(s) listed in the facility’s documented system, operating as the ‘Responsible Person’ remains engaged in the activity.

Any change that may impact on the Ex Service Facility complying with IECEx Scheme requirements, e.g. change of “Personnel” is required to be notified to the ExCB immediately.

It should be noted that the status of an Ex Competent Person is directly linked to the Ex Service Facility and is therefore not transferable between service facilities without assessment by an ExCB.

Replacement of Ex operatives or responsible Competent Person(s) shall have the evidence of their Ex competencies verified by the ExCB.

8.4 Records

Results of the Ex installations and initial inspections conducted by the Ex Service Facility shall be recorded by use of appropriate means that ensure:

- Legibility;
- Traceability of measured results to calibrated instruments with actual measurements recorded. A tick to just indicate pass is not accepted;
- Stored to enable retrieval in accordance with 3.1.2 above.

The Ex Service Facility shall retain all Ex installation and initial inspection records for a minimum of 10 years from the date the Ex installation or initial inspection was completed.
8.5 Conditions for Ex installation and initial inspection completion

Ex Service Facilities processes and procedures shall comply with the following, concerning Ex installation and initial inspection completion.

Ex installations and initial inspection shall be considered complete once a complying initial inspection report is issued in accordance with IEC 60079-14 and IEC 60079-17 by the Responsible Person of the Ex Service Facility.
Ex installation and initial inspection service report 
issued by Ex Service Facilities

A.1 General

This Annex A specifies the minimum content of an Ex Service Report to be prepared, recorded 
and retained in accordance with their QMS procedures by an organisation certified under the 
IECEx 03-3 Scheme to provide Ex installation and initial inspection services according to the 
requirements of IEC 60079-14 and IEC 60079-17 and the organisations accepted Scope.

This Ex Service Report shall be prepared following the provision of all Ex services relevant to 
the organisation’s operation as an IECEx Certified Service Facility.

Ex initial inspection service reports, including findings and solutions shall be reported taking 
to account aspects related to Ex equipment (both general and specific), Ex installation and 
environment (external influences), as required by IEC 60079-17.

An electronic copy of the Ex Service Report shall be provided to and approved by the 
management of the site, system, installation or equipment receiving the Ex service provided.

In cases of Ex initial inspection services using electronic programs, PDAs and RFIDs, all 
electronic files generated by the inspection program shall be provided to the management of 
site, also including complete documentation in PDF format.

A.2 Content of Ex inspection or maintenance service provision report form

The Ex Service Report shall contain all relevant details of at least the following content 
elements:

- Name of IECEx Certified Service Facility Organisation;
- The identifier of the IECEx Certificate held by this organisation as an IECEx Certified 
  Service Facility;
- Name and contact details of personnel from the IECEx certified Ex installation and initial 
  inspection Service Facility that provided services;
- The name and address of the recipient of the Ex service provided;
- The date that the Ex installation or initial inspection service was provided;
- Ex Report reference number, to be traced in the user verification dossier;
- Reference to IEC 60079-14 for Ex installation services;
- Reference to IEC 60079-14 and IEC 60079-17 for Ex initial detailed inspection services;
- For Ex installation or initial inspection services in offshore installations, reference also 
  shall be made to IEC 61892-7 - Mobile and fixed offshore units – Electrical installations 
  – Part 7: Hazardous areas;
- A brief description of the site, system, Ex equipment or Ex assembly receiving the Ex 
  installation or initial inspection service provided;
- The Ex types of protection employed in the site, system, Ex equipment or Ex assembly 
  receiving the Ex installation or initial inspection service provided;
- Copies of photographs, measurements and any other relevant artefacts regarding the 
  Ex installation or initial inspection services provided;
- For detailed Ex inspection services, the respective fulfilled Ex check-lists specified in 
  IEC 60079-14 or IEC 60079-17, indicating relevant equipment tags, area classification 
  documents, Ex equipment certificates and findings;
List and description of any findings, resolutions, actions taken or actions required related to Ex installation or initial inspection services provided, signed by Ex Service Facility Responsible Person, approved and signed by the Ex installation user or responsible person.