



**INTERNATIONAL ELECTROTECHNICAL COMMISSION SCHEME FOR
CERTIFICATION TO STANDARDS RELATING TO EQUIPMENT FOR USE IN
EXPLOSIVE ATMOSPHERES (IECEX SCHEME)**

Title: Guidelines on the Management of Assessment and Surveillance programs for the assessment of Manufacturer's Quality System, in accordance with the IECEx Scheme.

Introduction

The purpose of this document is to provide guidance that ensures a consistent approach by all IECEx Certification Bodies in the conduct and management of IECEx assessments and audits of manufacturer's quality systems.

While prepared as a guidance document, the requirements contained within are intended to be used or referenced within an ExCB's own internal quality management system.

Document History

Date	Summary
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0 Introduction

The IECEX Scheme provides for the assessment and surveillance of Manufacturer's Quality Management Systems and the issue of an IECEX Quality Assessment Report with IECEX Operational Document OD 005 specifying Quality Management system requirements.

The purpose of this document is to provide guidance upon the methodology, thereby, providing the opportunity for IECEX Certification Bodies to conduct assessments and audits of manufacturer's quality systems in a uniform manner.

This document is based on work conducted by the European Notified Bodies Group for ATEX and in turn is based upon ISO 19011.

This final document is a culmination of the work of ExMC **Working Group 5 - Assessment and Audit of Manufacturer's Quality systems** and was approved, subject to comment, during the IECEX Management Committee (ExMC) 2006 Shanghai Meeting.

NOTE ISO 19011: 2002 uses the term "audit" throughout but IECEX 02 uses the separate terms "assessment and surveillance". For the purpose of this document the term "audit" is applicable to both "assessment and surveillance".

1 Scope

This document provides guidance on the fundamentals of conducting assessment and surveillance visits as a means of verifying a manufacturer's compliance with the IECEx quality system requirements, specified in IECEx Operational Document OD 005, the management of these activities and the qualifications for auditors.

2 Normative references

ISO 9000: 2000 Quality Management Systems - Fundamentals and Vocabulary.

ISO 19011: 2002 Guidelines on quality and environmental management systems auditing.

IECEx Operational Document OD 005. IECEx Quality system requirements for manufacturers.

IAF Guidelines: Guidelines on the application of ISO/IEC Guide 62.

3 Terms and Definitions

NOTE For the purpose of this document, the terms and definitions given in ISO 9000: 2000, ISO 19011: 2002 and IECEx Operational Document OD 005 and below, shall apply.

3.1 Audit

Systematic, independent and documented process for obtaining **audit evidence** (3.4) and evaluating it objectively to determine the extent to which **audit criteria** (3.3) are fulfilled.

3.2 Product Audit

An audit (3.1) to determine whether the product is in compliance with the type described in the IECEx Assessment and Test Report.

3.3 Audit Criteria

Set of policies, procedures or requirements used as a reference.

3.4 Audit Evidence

Records, statements of fact or other information, relevant to the **audit criteria** (3.3) and which are verifiable.

NOTE Audit evidence can be qualitative or quantitative.

3.5 Audit Finding(s)

Result of the evaluation of the collected **audit evidence** (3.4) against **audit criteria** (3.3).

NOTE Audit findings can indicate either conformity or nonconformity with audit criteria.

3.6 Audit Conclusion(s)

Outcome of an **audit** (3.1), reached by the audit team after consideration of the audit objectives and all **audit findings** (3.5).

3.7 Audit Client

Organisation or person requesting an **audit** (3.1).

3.8 Auditee

Organisation being audited.

3.9 Auditor

Person with the **competence** (3.15) to conduct an **audit** (3.1).

3.10 Audit Team

One or more auditors conducting an **audit** (3.1).

NOTE 1 One auditor of the audit team is appointed as audit team leader.

NOTE 2 The audit team can include auditors-in-training and, where required, technical experts.

NOTE 3 Observers can accompany the audit team but do not act as part of it.

3.11 Technical Expert

Person who provides specific knowledge or expertise to the lead auditor with respect to the subject being audited.

NOTE 1 Specific knowledge or expertise includes those on the organisation, process, product, or activity to be audited, as well as language or cultural guidance.

NOTE 2 A technical expert does not act as an auditor in the audit team.

3.12 Audit Programme

Set of one or more **audits** (3.1) planned for a specific time frame and directed toward a specific purpose.

3.13 Audit Plan

Description of the on-site activities and arrangements for an **audit** (3.1).

3.14 Audit Scope

Extent and boundaries of an **audit** (3.1).

NOTE The scope typically includes a description of physical locations, organisational units, activities and processes, as well as the time period covered.

3.15 Competence

Demonstrated capability to apply knowledge and skills.

3.16 Initial Assessment

Activities related to the Notification of a manufacturer to determine whether the manufacturer and applicable manufacturing sites meet all the requirements of the relevant clauses of the specified standard (e.g. IECEx Operational Document OD 005: IECEx Quality system requirements for manufacturers necessary for granting notification as to whether they have effectively implemented, including documentation review, site audit at the manufacturers sites, preparation and consideration of the audit report and other relevant activities necessary to provide sufficient information to allow a decision to be made as to whether Notification shall be granted. Audit results shall be recorded on an approved Quality Assessment Report.

3.17 Surveillance

Surveillance of a manufacturer's quality system takes place on a regular basis as defined in this document. The surveillance audit should be product based with audit results being recorded on an approved Surveillance Audit Report.

The purpose of surveillance programmes is to:

- Verify that the approved quality system and associated product quality plans, continues to be implemented; and
- To consider the implications of any changes to the system, initiated as a result of changes in the manufacturers operation; and
- To confirm continued compliance with the Quality System requirements of IECEx Operational Document OD/005.
- To evaluate any addition manufacturing, suppliers, sub-suppliers where critical requirements of OD/005 are being performed.

3.18 Re-Assessment

To verify overall continuing effectiveness of the manufacturer's quality system in its entirety. In most cases it is unlikely that a period greater than three years for periodic re-assessment of the manufacturer's quality system would satisfy this requirement. The re-assessment should provide for a review of past performance of the system over the period of the Notification. The re-assessment program shall take into consideration the results of the above review and shall at least include a review of the quality system documents and a site audit (which may replace or extend a regular surveillance audit). It shall at least ensure

- the effective inter-action between all elements of the system;
- the overall effectiveness of the system in its entirety in the light of changes in operations;
- demonstrated commitment to maintain the effectiveness of the system.

3.19 Quality Assessment Report.

Upon the acceptance of the assessment, the Certification Body shall. Issue an IECEx Quality Assessment Report (QAR) and have this registered on the official IECEx Website www.iecex.com .

4 Principles of auditing

Auditing is characterised by its reliance on a number of principles. These make the audit an efficient and reliable tool in support of management policies and controls, providing information on which management can act to improve its performance. Adherence to these principles is a prerequisite for audit conclusions that are relevant and sufficient, such that auditors working independently from one another will reach similar conclusions in similar circumstances.

Three of these principles relate primarily to personal characteristics of the auditors themselves. These are:

Ethical conduct - *the foundation of professionalism*

The role of the auditor is one of trust, integrity, confidentiality and discretion.

Fair presentation - *the obligation to report truthfully and accurately*

Audit findings, audit conclusions and audit reports reflect truthfully, accurately and completely the audit activities. Any unresolved or diverging opinions between the audit team and the auditee and any obstacles encountered are reported.

Due professional care - *application of reasonable care in auditing*

Auditors exercise a degree of care appropriate to the importance of the task they perform and to the confidence placed in them by audit clients and other interested parties. Having the necessary competence is an important prerequisite.

The remaining two principles of auditing relate primarily to the audit process. An audit is by definition independent and systematic and these characteristics are closely linked to the following two principles of auditing:

Independence - *the basis for the impartiality and objectivity of the audit conclusion*

Audits are objective and independent. Audit team members are free from bias and conflict of interest.

Evidence - *the rational basis for reaching audit conclusions*

Audit evidence is verifiable. It is based on samples of the information available, since an audit is conducted during a finite period of time and with finite resources. However, the use of sampling is appropriate to the confidence placed in the audit conclusions.

5 Managing an audit programme

5.1 Introduction

An IECEx Certification Body having a need to conduct audits shall implement and manage an efficient and effective audit programme. The purpose of an audit programme is to assist the IECEx Certification Body in providing the resources necessary to facilitate the conduct of individual audits on a complete and timely basis.

The IECEx Certification Bodies top management shall grant the authority for managing the audit programme.

Managing the audit programme includes:

- a) establishing the objectives and extent of the audit programme;
- b) establishing the responsibilities, resources and procedures;
- c) ensuring the implementation of the audit programme;
- d) monitoring and reviewing the audit programme;
- e) ensuring that appropriate audit programme records are maintained.

Figure 1

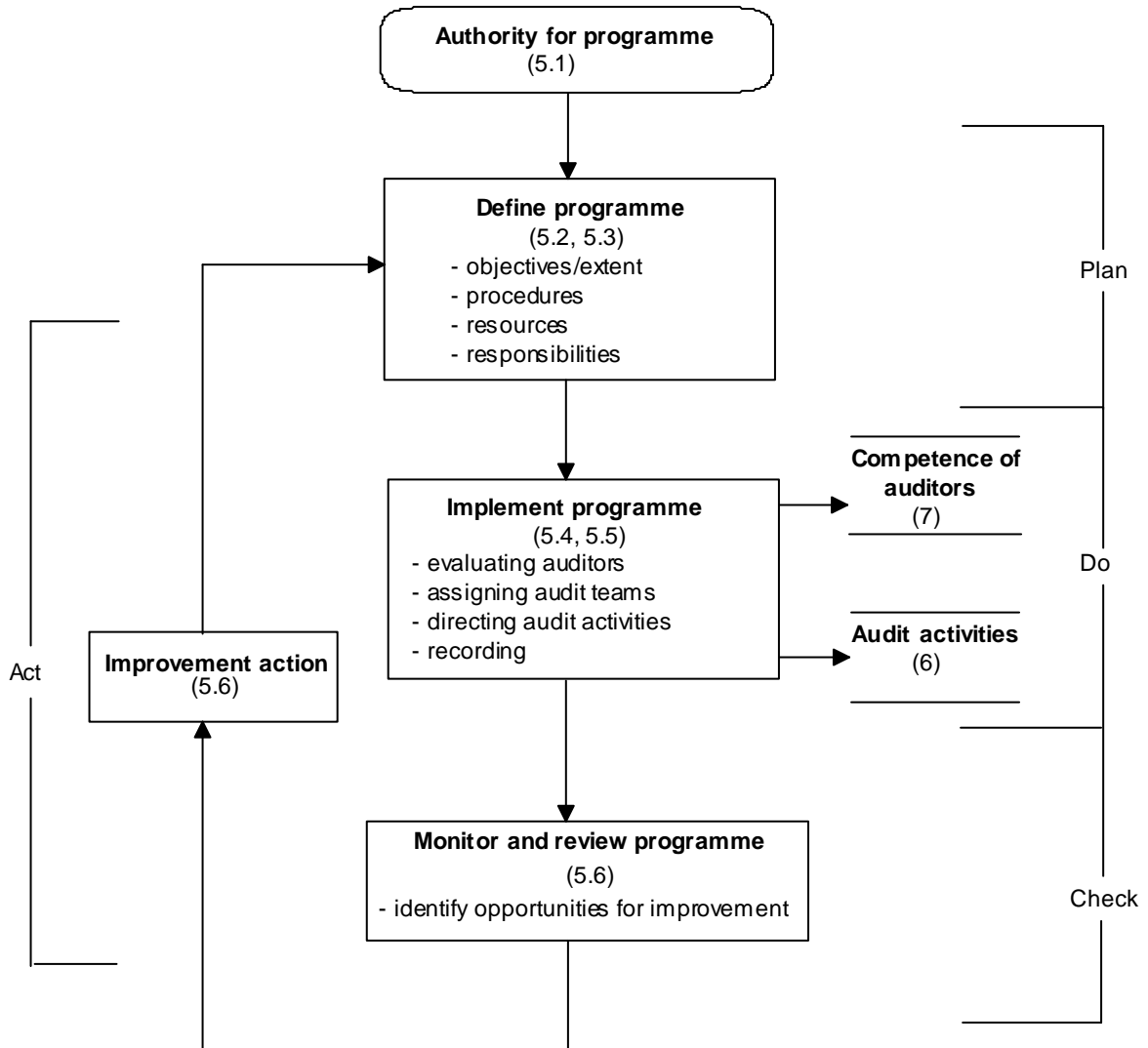


Figure 1 - illustrates the application of the Plan-Do-Check-Act cycle to the management of an audit programme

Note - The numbers in this and all subsequent figures refer to the relevant clauses of this document.

5.2 Audit programme objectives and extent

5.2.1 Objectives of the audit programme The objective of the audit programme is to establish that the manufacturer is complying with IECEx Operational Document OD 005, and with respect to the certificates listed or to be listed on the on line system. Depending on their size, nature and complexity, organisations may meet the objectives in a single audit.

The objective can be based on consideration of:

- a) conformity of the product with the type described in the IECEx Test Report and with the requirements of the IEC Standard, which apply to it.
- b) management priorities;
- c) commercial intentions;
- d) management system requirements supporting conformity of the product;
- e) legal and contractual requirements;
- f) supplier evaluation;
- g) customer requirements;
- h) potential risks to the organisation.

5.2.2 Extent of the audit programme

An audit programme can vary in size, nature and complexity. The extent of the programme will be influenced by:

- a) scope, objective, duration and frequency of each audit to be conducted;
- b) size, nature and complexity of the organisation audited;
- c) the number, importance, complexity, similarity and locations of the activities to be audited;
- d) standards, legal and contractual requirements, policies, procedures and other audit criteria;
- e) accreditation and registration/certification;
- f) the results of previous audits or a previous audit programme review;
- g) language, cultural and social issues;
- h) concerns of interested parties;
- i) significant changes to any organisations, activities or functional areas.

5.2.2.1 Scope of initial assessment, surveillance and re-assessment

a) Initial assessments and re-assessments:

For initial assessments and re-assessments all requirements of OD/005 apply. These assessments may be conducted in whole or part at the manufacturer's premises.

It is the CB (Certification Body) responsibility to determine what level of assessment is required for suppliers / sub-suppliers that are responsible for critical operations and requirements laid down in OD/005. Examples of critical operations include but are not limited to:

- Assembly / sub-assembly of product
- Final testing of product
- Labelling of product
- Inspection and control of critical operations.

It is not the intent of this requirement to increase or require CB's to audit suppliers or sub-suppliers. It is however the responsibility of the CB's to evaluate if suppliers / sub-suppliers responsible for requirements of OD/005 have the necessary quality systems and quality plans in place to insure the requirements of OD/005 are being met. Examples of evaluations of suppliers / sub-suppliers can include:

- Review of a current ISO certificate with the proper scope
- Audits performed by the supplier
- Audits performed by another CB
- Audits by the CB
- Components covered by the IECQ Scheme (www.iecq.org)

b) Surveillance:

The surveillance visits at the manufacturer's premises shall include:

- the system maintenance elements, which are internal audit, management review and preventive and corrective action;
- customer complaints;
- changes to the documented system;
- areas subject to change;
- selected elements of the certification/registration standard;
- other selected areas as appropriate.
- identification of any new manufacturing locations
- review of suppliers and/or sub-suppliers performing critical operations.
- re-assessment is defined in clause 3.18 of this document.

NOTE: Where a manufacturer has a certified quality system with an appropriate scope, certified by a recognised body (Type A or C manufacturer), then the scope of assessment/surveillance may be restricted to assessing the effectiveness of that quality system with respect to the certificates listed or to be listed upon the on-line notification system.

5.2.2.2 Audit programme for IECEx Certification Bodies

5.2.2.2.1 Initial and Re-assessments

IECEx Certification Bodies have essentially 3 types of customer, concerning initial or re-assessments:

- TYPE (A) a manufacturer requiring an initial assessment or re-assessment prior to the -issue of an IECEx QAR, where the manufacturer has a certified quality system e.g. ISO 9001: 2000 with an appropriate scope certified by a recognised body. (The scope does not necessarily need to include protection concepts)

- TYPE (B) a manufacturer requiring an initial assessment or re-assessment prior to the issue of a QAR, where the manufacturer does not have a certified quality system e.g. ISO 9001: 2000, or a certified quality system with an inappropriate scope. (The scope does not necessarily need to include protection concepts)

- TYPE (C) a manufacturer requiring initial assessment or periodic surveillance, where the manufacturer has also contracted the IECEx Certification Body in its capacity as an ISO 9001 Certification provider to integrate the two activities i.e. IECEx Quality Assurance Notification and a certified quality system e.g. ISO 9001: 2000. (The scope does not necessarily need to include protection concepts)

IECEx Certification Bodies are required to take into consideration the factors listed in clause 5.2.2 of this document. The “complexity” factor given in 5.2.2.b is one of the major issues for IECEx Certification Bodies in that products include equipment (electrical and non electrical) along with protective systems, components and devices required for contributing to the safe functioning of equipment and/or protective systems, all of which covers a wide range of technologies.

Therefore as a guide to the amount of resource (in auditor days) that should be spent conducting initial assessments, based upon the number of protection concepts, number of Ex personnel located onsite, and if there is a Certified Quality System in place the following table(s) are provided. These tables are only supplied

as guidelines. It is the IECEx auditor's responsibility to ensure that the appropriate time is spent to ensure that audits cover all requirements of OD 005 and any issued certificates on the online system

**WITH CERTIFIED QUALITY SYSTEM
(Manufacturing type A,C)**

No. OF PROTECTION CONCEPTS LISTED ON THE ON-LINE NOTIFICATION	AUDITOR(S) TIME ON SITE IN PERSON DAYS		
	25 OR LESS Ex PERSONS ON SITE	100 OR LESS Ex PERSONS ON SITE	100 OR MORE Ex PERSONS ON SITE
1	1	1	1 - 2
2 - 3	1 – 1 1/2	1 – 1 1/2	2
4 - 5	2	2 - 3	3 - 4
6+	2 - 3	3	3 - 4

**WITHOUT CERTIFIED QUALITY SYSTEM
(Manufacturing types B)**

No. OF PROTECTION CONCEPTS LISTED ON THE NOTIFICATION	AUDITOR TIME ON SITE IN PERSON DAYS		
	25 OR LESS Ex PERSONS ON SITE	100 OR LESS Ex PERSONS ON SITE	100 OR MORE Ex PERSONS ON SITE
1	2	2	2 - 3
2 - 3	2 - 3	2 - 3	3
4 - 5	2 - 3	3 - 4	3 - 4
6+	3 - 4	4	5

*The above times do not include the time spent by technical experts.

Protection concepts as referenced in the above tables are represented and identified by the different technologies, i.e. Ex d, Ex i, Ex n etc., as used for equipment certified under the IECEx Scheme.

These guidance times may be varied at the auditor's discretion provided that all protection concepts are subject to adequate assessment / surveillance. For example the duration may be extended where there is not a common language, a large number of certificates are involved or reduced if processes are similar for several different products but with a minimum of one auditor day for an initial assessment.

5.2.2.2 Surveillance Assessments

Surveillance assessments shall be carried out as follows:-

- a) For manufacturers without a certified ISO 9001:2000 Quality System, surveillance audits should be conducted every 12 months.
- b) Manufacturers with a Qualified ISO 9001:2000 Quality System, surveillance audits should be carried out every 18 months.

Additional surveillance / assessments may be conducted at the discretion of the IECEx Certification Body based on the manufacturer's performance and results of previous surveillance / audit results. It is recommended that the time frame for audit intervals begin when the initial assessment report is issued.

5.3 Audit programme responsibilities, resources and procedures

5.3.1 Responsibilities

Responsibility for managing an audit programme should be assigned to (an) individual(s) who has (have) a general understanding of audit principles, of auditor competence and the application of audit tools and methods. They should also have technical and business understanding relevant to the activities to be audited.

Those assigned the responsibility for managing the audit programme should:

- a) define, implement, maintain, and improve the audit programme;
- b) identify and provide resources for the programme.

5.3.2 Resources

When identifying resources for the audit programme, consideration should be given to:

- a) financial resources necessary to develop, implement, manage and improve audit activities;
- b) audit tools and methods;
- c) availability of auditors and technical experts;
- d) processes to achieve and maintain auditor competence, and to improve auditor performance;
- e) auditor competence appropriate to the particular audit programme objectives;
- f) time, travel and other auditing needs.

5.3.3 Procedures

Audit programme procedures should be established and should address, for example:

- a) planning and scheduling audits;
- b) assuring the competence of auditors and audit team leaders;
- c) selecting appropriate audit teams;
- d) conducting audits;
- e) performing audit follow-up.

5.4 Audit programme implementation

The implementation of an audit programme should include:

- a) documenting the audit programme and communicating it to relevant parties;
- b) co-ordinating and scheduling audits and other audit programme activities;
- c) establishing and maintaining a process for the initial evaluation of auditors and the on-going evaluation of training needs and continuing professional development of auditors;
- d) ensuring the appointment of audit teams;
- e) providing required resources to the audit teams;
- f) ensuring the conduct of audits according to the audit programme;
- g) ensuring the control of records of the audit activities;
- h) ensuring review and approval of audit reports, and ensuring their distribution to the audit client and other specified parties;
- i) ensuring audit follow-up, if applicable.

5.5 Audit programme records

Records of all IECEx audits shall be maintained by the IECEx Certification Body to demonstrate the operation of the audit programme and shall include:

- a) results of audit programme review;
- b) audit records, such as:
 - audit plans;
 - audit reports;
 - nonconformity reports; and
 - corrective and preventive action reports;
- c) audit personnel records, covering subjects such as performance evaluation, audit team selection and training.

5.6 Audit programme monitoring and reviewing

The effectiveness of an IECEx Certification Body's auditing programme shall be monitored by the ExCB itself and at appropriate intervals reviewed and included as part of their internal quality system review, to assess whether its objectives and those of the IECEx Scheme have been met. This audit programme review should

be carried out to assess the audit programme effectiveness and identify opportunities for improvement.

Monitoring should be carried out by using performance indicators that measure, for example:

- the ability of the audit teams to meet audit objectives;
- conformity with audit programmes and schedules;
- feedback from audit clients, auditees and auditors;
- time to close audit programme corrective actions.

This audit programme review should consider for example:

- a) results and trends from monitoring;
- b) conformity with procedures;
- c) evolving needs and expectations of interested parties;
- d) audit records;
- e) alternative or new auditing practices.

Results of the audit programme review can lead to corrective actions and improvement of the IECEx Certification Body's audit programme.

6 Audit Activities

6.1 Introduction

This clause contains guidance on managing and conducting audits, including the selection of audit team members.

After completion of an audit, audit follow-up actions can take place (see clause 6.8). Figure 2 provides a flowchart of the audit process as described in this clause.

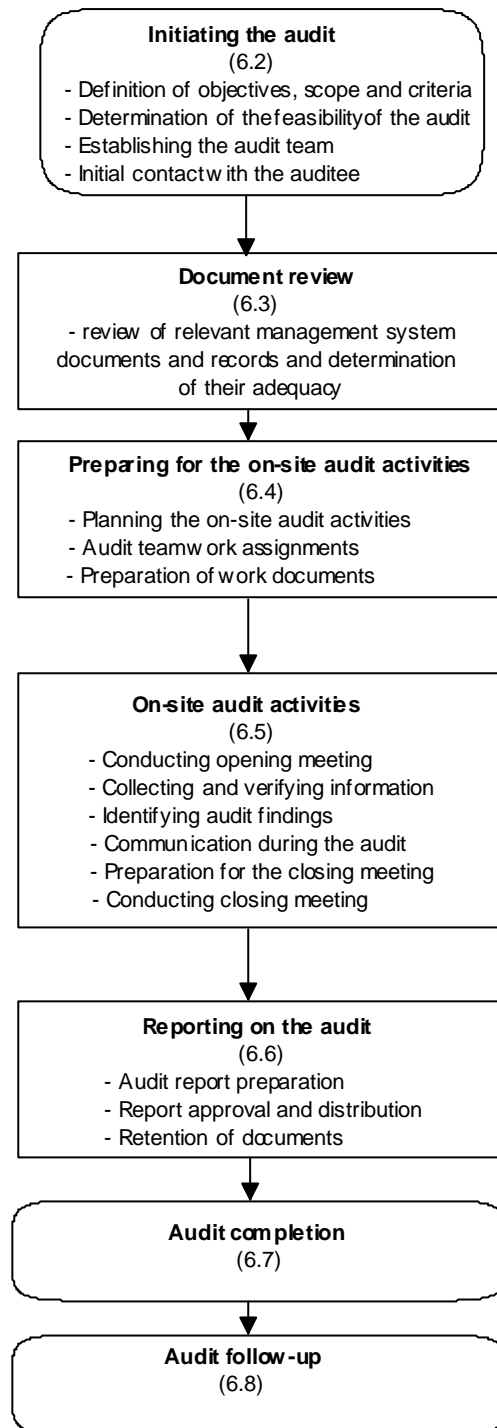


Figure 2 - Flowchart of the audit process

6.2 Initiating the audit

6.2.1 Audit objectives, scope and criteria

Within the overall objectives of an audit programme, an individual audit should be based on defined objectives, scope and criteria.

The objective for the audit programme is to establish that the manufacturer is complying with IECEx Operational Document OD 005 with respect to all the certificates listed on the online notification system, and kept up-to-date by the IECEx Certification Body planning and conducting the audit programme. An individual audit that is part of a surveillance programme may address only part of a quality management system.

In preparing for an audit, the following shall be communicated to the auditee and recorded on the job file:

- The audit scope describes the extent and boundaries of the audit in terms of factors such as physical locations, organisational units, activities and processes to be audited and, where relevant, the time period covered by the audit.
- The audit criteria, i.e.. IECEx OD 005
- Dates of the audit, as agreed with the auditee
- Membership of the audit Team

6.2.2 Feasibility of the audit

Those responsible for managing the audit programme should determine the feasibility of the audit, taking into consideration such factors as:

- a) sufficient and appropriate information for planning the audit;
- b) adequate co-operation from the auditee;
- c) availability of time and adequate resources.

Upon receipt of an application from a manufacturer for an IECEx Certificate of Conformity, the IECEx Certification Body should

- ensure the documentation as required by IECEx Operational Document OD 005 as appropriate and the relevant IEC Standard is provided.
- ascertain that sufficient and appropriate information regarding the manufacturer is available e.g. size, location, status of quality system.

An IECEx Certification Body is NOT permitted to issue an IECEx Quality Assessment Report until a document review and site assessment has been satisfactorily completed.

Where products to be covered by an IECEx Certificate of Conformity are to be manufactured in different locations or countries, the IECEx Certification Body to whom the application for an IECEx Certificate of Conformity has been lodged (known as ExCB A) may engage other IECEx Certification Bodies to perform sites visits of the various manufacturing locations under the direction and control of ExCB A.

An IECEx Certification Body is permitted to amend the scope of an existing QAR Notification (without a site assessment visit) where the technology/processes are declared similar to those already covered.

6.2.3 Establishing the audit team

When the audit has been declared feasible, an audit team should be established and an audit team leader is appointed taking into account the competence needed to achieve the objectives of the audit. When there is only one auditor, the auditor should perform all applicable duties of an audit team leader.

Those responsible for managing the audit programme and/or the audit team leader, in consultation with the audit client and, if necessary, the auditee, should identify the resources necessary.

When deciding the size and composition of the audit team, consideration should be given to the following:

- a) audit objectives, scope, criteria, location(s) and estimated duration;
- b) the overall competence of the audit team needed to achieve the objectives of the audit;
- c) requirements from accreditation/certification bodies, as applicable;
- d) the language of the audit and understanding of the auditee's social and cultural characteristics either through their own skills or through the support of a technical expert;
- e) the need to assure the independence of the audit team from the activities to be audited and to avoid conflict of interest;
- f) the ability of the audit team members to interact effectively with the auditee and to work together.

The process of assuring the competence of the audit team should comprise the following steps:

- 1) identifying the knowledge and skills needed to achieve the objectives of the audit;
- 2) defining the criteria by which knowledge and skills are to be evaluated;
- 3) selecting the audit team such that all of the knowledge and skills needed to conduct the audit and to achieve the audit objectives are present in the audit team. If not fully covered by the auditors in the team, the overall competence may be satisfied by including technical experts in the team.

Technical experts should operate under the direction of an auditor. The IECEx Certification Body should evaluate and record the required competencies of technical experts.

Table 2 in clause 7 provides examples of methods for the evaluation of auditor competence.

Both the audit client and auditee have a right to request the replacement of particular team members on reasonable grounds which should be communicated to those responsible for managing the audit programme. Any decisions to replace team members should be taken by those responsible for managing the audit programme. Examples of reasonable grounds can be conflict of interest situations (such as an audit team member having been a former employee of the auditee or having provided consultancy services) or previous unethical behaviour.

6.2.4 Initial contact with the auditee

The initial contact with the auditee can be informal or formal. Depending on the audit situation, those responsible for managing the audit programme or audit team leader should consider the following, as appropriate:

- a) contacting the auditee to establish communication channels;
- b) providing information on proposed timing and audit team composition;
- c) requesting documents, including records, if needed, and
- d) making arrangements for the audit.

Any need for accompanying persons such as observers or guides for the audit team should be mutually agreed.

6.3 Document Review

Relevant management system documents, including records, from the auditee, including any previous audit reports, should be reviewed to determine the conformity of the system components or processes, as documented, with audit criteria. The review, normally by the audit team leader or by one or more auditors assigned by the audit team leader, should take into account the size, nature and complexity of the organisation, and the objectives and scope of the audit. A

preliminary on-site visit is an option to get a good overview of available information.

If the auditee's management system documentation is found to be inadequate, such that it is not commensurate with the audit scope or criteria, the audit client, those responsible for managing the audit programme and the auditee should be informed. Further resources should not be expended on the audit until such concerns are resolved to the satisfaction of those responsible for managing the audit programme in consultation with the audit client, the audit team leader and, if appropriate, the auditee.

6.4 Preparing for the on-site audit activities

6.4.1 Planning the on-site audit activities

NOTE The following guidance may not be fully applicable to unexpected visits.

The audit team leader should prepare a plan for the on-site audit activities. This plan should provide necessary information to the audit team, auditee and audit client. It also facilitates scheduling and co-ordination of the audit activities.

The level of detail provided in the audit plan, should be adapted to suit the scope and complexity of the audit. The details can for example differ between initial and subsequent surveillance visits.

The audit plan includes the audit objectives and scope; which shall include a product audit and should include;

- a) the audit criteria and any reference documents;
- b) the dates and places where the on-site audit activities are to be conducted;
- c) the identification of the organisational and functional units and processes to be audited;
- d) the expected time and duration for audit on-site activities, including meetings with the auditee's management and audit team meetings.

The audit plan can also include, as appropriate:

- e) the identification of the sites, activities, and management system processes that are essential to meeting audit objectives in order to allocate appropriate resources to critical areas of the audit;
- f) the identification of the auditee's key representative participating in the audit;

- g) the working and reporting language(s) of the audit where this is different from the native language of the auditor(s) and/or the auditee;
- h) the identification of roles and responsibilities of the audit team members and any accompanying persons;
- i) the audit report topics (including any methods of nonconformity gradings), format and structure, expected date of issue and distribution;
- j) logistic arrangements (travel, on-site etc.)
- k) matters related to confidentiality;
- l) any arrangements for audit follow-up actions.

The plan is to be presented to the manufacturer prior to conducting all certification audits but may not be necessary for all surveillance audits.

Any objections by the auditee should be resolved among the audit team leader, the auditee, the audit client and ExCB management before continuing the audit.

The audit plan should be sufficiently flexible to permit changes, such as any changes in emphasis, which can become necessary as the on-site audit activities progress. Any revised audit plan should be agreed among the parties concerned before continuing the audit.

6.4.2 Audit team work assignments

When an audit is conducted by an audit team comprising more than one auditor, the audit team leader, in consultation with the audit team, should assign to each team member responsibility for auditing specific management system processes, functions, sites, areas or activities. Such assignments should take into account the need for auditor independence, competence and efficient use of resources as well as different roles and responsibilities of auditors, auditors-in-training, and technical experts. Changes to the work assignments can be made to ensure the achievement of the audit objectives.

The audit team members should review the relevant information related to their audit assignments and prepare any work documents necessary for those assignments.

6.4.3 Work documents

Work documents used by the audit team for the purpose of reference and/or recording the proceedings of the audit can include:

- a) audit procedures, checklists and audit sampling plans;
- b) forms for recording information, supporting evidence, records of audit findings and meetings.

The use of work documents, such as checklists and forms, should not restrict the extent of audit activities.

Work documents, and any records resulting from their use, should be retained, at least until audit completion. Retention of documents, including records, after audit completion is described in clause 6.6.3. Those involving confidential or proprietary information should be suitably safeguarded at all times by the audit team members.

6.5 On-site audit activities

6.5.1 Opening meeting

An opening meeting should be held to confirm the audit plan, clarify how the audit activities will be undertaken, and to establish communications. The opening meeting should be held with the auditee's management or, where appropriate, those responsible for the functions or processes to be audited. The opening meeting should also include opportunity to the auditee to ask any questions.

The meeting should be formal and records of the attendance should be kept. The meeting should be chaired by the audit team leader and the following items considered, as appropriate:

- a) introduction of the participants, including an outline of their roles;
- b) confirmation of the audit objectives, scope and criteria;
- c) confirmation of the audit timetable and other relevant arrangements with the auditee, such as the date and time for the closing meeting, any interim meetings between the audit team and the auditee's management, and any late changes;
- d) methods and procedures to be used to conduct the audit, advising the auditee that the audit evidence will only be a sample of the information

available and that therefore there is an element of uncertainty inherent in all audits;

- e) confirmation of formal communication links between the audit team and the auditee;
- f) confirmation of the language to be used during the audit;
- g) confirmation that during the audit, the auditee will be kept informed of audit progress;
- h) confirmation that any resources and facilities needed by the audit team are available;
- i) confirmation of matters relating to confidentiality;
- j) confirmation of relevant work safety, emergency and security procedures for the audit team;
- k) confirmation of availability, roles and identities of any guides;
- l) method of reporting including any grading of non-conformities;
- m) information about conditions on which the audit can be terminated;
- n) information about any appeal system on the conduct or outcome of the audit.

6.5.2 Roles and responsibilities of guides

Where guides are assigned, they should assist the audit team and act on the request of the audit team leader. Their duties can include ensuring that rules concerning site safety and security procedures are known and respected by the auditors, and they can also witness the audit on behalf of the auditee. Guides should not influence or interfere with the conduct of the audit except where, with the agreement of the auditor, the guide can provide clarification or assist in establishing correct information.

6.5.3 Collecting and verifying information

Figure 3 provides an overview of the process steps from collecting information to reaching audit conclusions.

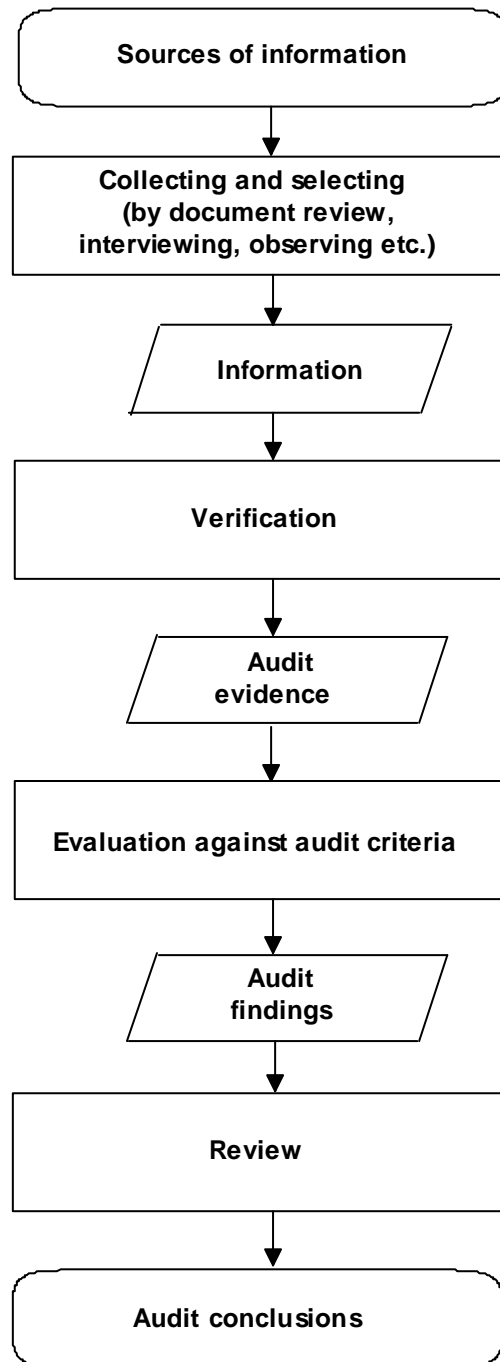


Figure 3 - Flowchart of the process from collection of information to reaching of audit conclusions.

Information relevant to the audit objectives, scope, and criteria, including information relating to interfaces between functions, activities, and processes should be collected during the audit. It should be verified by the auditor(s) and can then be considered to be audit evidence. Audit evidence should be identified as such and recorded.

NOTE The audit evidence will inevitably be only samples of the information available, since an audit is conducted during a finite period of time and with limited resources. There is thus an element of uncertainty inherent in all audits, and those acting upon the audit conclusions should be aware of this uncertainty.

The sources of information chosen can vary according to the scope and complexity of the audit and can include:

- a) interviews;
- b) observations of activities and the surrounding work environment and conditions;
- c) documents, including, for example, policy, objectives, plans, procedures, instructions, product certificates and Notifications, specifications, drawings, contracts orders;
- d) records, such as inspection records, minutes of meetings, reports or logbooks on customer complaints and other relevant communication from external parties, audit reports, monitoring programmes and results of measurements;
- e) data summaries, analyses, metrics and performance indicators;
- f) records of the basis of relevant auditee's sampling programmes and the procedures for ensuring effective quality control of sampling and measurement processes;
- g) reports from other sources, for example, customer feedback, external reports and vendor supplier ratings;
- h) computerised data bases and web sites.

Practical Help – Interviews

Interviews are one of the important means of collecting information and should be carried out in a manner adapted to the situation and person interviewed. However, the auditor should consider the following:

- a) interviews should be held with persons from different levels and functions, and especially with persons performing activities or tasks within the scope of the audit;
- b) whenever possible, the interview should be conducted during normal working hours and at the normal workplace of the interviewed person;
- c) every attempt should be made to put the interviewed person at ease prior to the interview;
- d) the reason for the interview and any note taking should be explained;
- e) interviews can be initiated by asking the persons to describe their work;
- f) the results from the interview should be summarised and reviewed with the interviewed person
- g) questions that bias the answers (leading questions) should be avoided;
- h) the interviewed persons should be thanked for their participation and co-operation

6.5.4 Audit findings

Collected audit evidence should be evaluated against the audit criteria to generate the audit findings. An audit finding can indicate either conformity or nonconformity with audit criteria. If so decided, audit findings can be graded in accordance with the audit plan.

An audit team should meet as needed to review the audit findings at appropriate stages during the audit.

Conformities should be summarised to at least indicate locations, functions, processes, or requirements that were audited.

Individual audit findings of conformity should also be recorded and supported with audit evidence.

Nonconformities should be recorded and supported by audit evidence. Nonconformities should be reviewed with an appropriate auditee representative to obtain acknowledgement of the audit evidence. The acknowledgement indicates that the audit evidence is accurate, and that the nonconformity is understood. Every attempt should be made to resolve any divergence of opinion concerning the audit evidence and/or findings, and unresolved points should be recorded.

The audit team leader shall determine whether it is possible for the auditee to correct any nonconformities raised, prior to the completion of the audit.

6.5.5 Communication during the audit

Dependent upon the scope and complexity of the audit, it can be necessary to make formal arrangements for communication during the audit.

An audit team should confer at least daily in order to exchange information, assess audit progress, and reassign work between auditors as needed.

During the audit, the audit team leader should periodically communicate the status of the audit and any concerns to the auditee and audit client, as appropriate. Any evidence collected in the audit that suggests a significant risk exposure should be reported immediately to the auditee and, as appropriate, to the audit client.

Where the available audit evidence indicates that the audit objectives are unattainable, the audit team leader should report the reasons to the audit client and the auditee to determine the appropriate action. Such action can include reconfirmation of the audit plan, termination of the audit or a change in the audit objectives.

Any concern about an issue outside the audit scope should be noted and reported to the audit team leader, for possible communication to the audit client and auditee. Any need for changes in the audit scope which may become apparent as on-site auditing activities progress should be reviewed with and approved by the audit client and, as appropriate, the auditee.

6.5.6 Preparation for the closing meeting

The audit team should confer prior to the closing meeting in order to:

- a) review the audit findings and any other appropriate information collected during the audit;
- b) prepare a list of audit findings, if appropriate;

- c) reach consensus on the audit conclusions;
- d) agree on roles and tasks for the closing meeting;
- e) prepare recommendations, if specified by the audit objectives;
- f) discuss subsequent audit follow-up, if appropriate.

In many instances a simplified approach can be taken for the audit team review, depending on the audit objectives and scope and the audit team size.

6.5.7 Closing meeting

A closing meeting should be held to present audit findings and conclusions in such a manner as to ensure that they are understood and acknowledged by the auditee, and to agree, if appropriate, on the time period for the auditee to present any corrective action plan.

The meeting should be formal and records of attendance, should be kept. The meeting chaired by the audit team leader should be held with the auditee's management and those responsible for the functions audited.

Any unresolved diverging opinions relating to audit findings and/or conclusions between the audit team and the auditee should be discussed and if possible resolved. If not resolved, both opinions should be recorded.

6.6 Reporting on the audit

6.6.1 Audit report preparation and content

The audit team leader should be responsible for the preparation and contents of the audit report.

The audit report should provide a complete, accurate, concise and clear record of the audit and should contain audit conclusions on issues such as the following, if within the audit objectives and scope:

- extent of conformance of the quality system to the requirements of IECEx OD 005;
- the effective implementation and maintenance of the quality system, relevant to the requirements of IECEx OD 005;
- the ability of management review process to ensure the continuing suitability, adequacy, and effectiveness of the quality system, relevant to the requirements of IECEx OD 005;

The audit report should also include, or make reference to the following:

- a) the identification of the organisational and function units or processes audited;
- b) the identification of the manufacturer and audit client;
- c) the identification of audit team members;
- d) the date(s) and place(s) the on-site audit activities were conducted;
- e) the audit criteria, and, if applicable, a list of reference documents, against which the audit was conducted; e.g. IECEx Operational Document OD 005 Potentially explosive atmospheres – Application of quality systems.
- f) the audit findings.

The audit report can also include or reference, as appropriate:

- g) the agreed audit objectives, scope and plan;
- h) the time period covered by the audit;
- i) the identification of the auditee's key representatives participating in the audit;
- j) a summary of the audit process including any obstacles encountered;
- k) a statement of the confidential nature of the contents;
- l) a distribution list for the audit report;
- m) confirmation that the audit objectives have been accomplished within the audit scope in accordance with the audit plan;
- n) any agreed follow-up action plans;
- o) any unresolved diverging opinions between the audit team and the auditee;
- p) areas not covered, although within the scope.

6.6.2 Report approval and distribution

Every attempt shall be made for the audit report to be submitted to the audit client within 1 month from the date of the audit. The audit team leader should be responsible for monitoring this. If this is not possible, the audit team leader shall inform the audit client of the reasons for the delay and a revised issue date then agreed.

The audit report shall be dated, and reviewed by the relevant ExCB Manager and approved by a nominated representative within the ExCB.

The audit report should then be distributed as follows:

- Original to the audit client;
- 1 Copy to be retained by the IECEx Certification Body

When the audit report (QAR) has been issued to the audit client, the ExCB conducting the audit shall register the QAR on the official IECEx On-Line System, www.iecex.com

Note: Refer to Operational Document OD 011 Part 2 for guidance regarding On-Line registration of QARs.

The confidentiality of the audit report should be respected and appropriately safeguarded by the audit team members and all report recipients.

6.6.3 Retention of documents

The audit report should be retained for a period not less than 10 years by the IECEx Certification Body, or longer at their own discretion.

Unless required to do so by law, the IECEx Certification Body, audit team and those responsible for managing the audit programme should not disclose the contents of documents, any other information obtained during the audit, or the audit report, to any other party without the explicit approval of the audit client and, where appropriate, the approval of the auditee. If disclosure of the contents of any audit document is required, the audit client and auditee should be informed as soon as possible.

6.7 Audit completion

The audit is completed when all activities in the audit plan have been finalised and the approved audit report has been distributed to the manufacturer with a copy retained by the IECEx Certification Body.

6.8 Audit Follow-up

6.8.1 Review

The IECEx Certification Body should review the lead auditors audit report, any non conformities raised and the manufacturer's responses, and then the IECEx Certification Body should approve the report.

The IECEx Certification Body should have a unified method of addressing the actions required following an audit.

The following rating system is provided for guidance.

RATING	DEFINITION	ACTION FOLLOWING AN INITIAL ASSESSMENT OR RE-ASSESSMENT	ACTION FOLLOWING A SURVEILLANCE VISIT
A	Where a quality system fully meets the requirements or where there are only very few minor nonconformities. Also where compliance of the product is observed during a product audit.	Issue or maintain IECEx Certificate of Conformity	Updated QAR to be issued
B	Where the quality system has a series of minor nonconformities Also where compliance of the product is observed during a product audit.	Issue or maintain IECEx Certificate of Conformity upon receipt of satisfactory documentary evidence supporting effective corrective action which is then subject to verification at the next surveillance visit	IECEx Certification is to be maintained upon receipt of an acceptable corrective action plan, which is subject to verification at the next visit.
C	Where the quality system has major nonconformities and, or there is a non compliant product observed during the product audit.	Issue or maintain IECEx Certificate of Conformity only after a satisfactory follow-up visit has verified that the corrective actions have been effectively documented and implemented.	IECEx Certificate of Conformity is to be maintained only after a satisfactory follow-up visit has verified that the corrective actions have been effectively documented and implemented. Should the manufacturer fail to take timely and effective corrective action, then the IECEx Certification Body reserves the right to suspend or withdraw the IECEx Certificate of Conformity(*).
D	Where the quality system has many major nonconformities which may include non compliant	Issue or re-issue the IECEx Certificate of Conformity only after a further complete assessment of the quality	Suspend (*) the IECEx Certification pending a further complete assessment to re-

RATING	DEFINITION	ACTION FOLLOWING AN INITIAL ASSESSMENT OR RE-ASSESSMENT	ACTION FOLLOWING A SURVEILLANCE VISIT
	product observed during the product audit	system has been satisfactorily completed.	establish the effectiveness of the quality system. This is to be followed by surveillance visits at a frequency, which maintains confidence in the effectiveness of the quality system.
E	Where there is no quality system or a system that has serious deficiencies rendering it ineffective	Close the application, no IECEX Certificate of Conformity to be issued or re-issued	Withdraw (*) the IECEX Certification and inform other IECEX Certification Bodies

* Where the nonconformities only affect a particular IECEX Test Report(s), which are listed on the QAR, then as an alternative to suspension or withdrawal of the whole QAR the particular Test Report(s) in question, may be removed from the QAR. In this case all other IECEX Certification Bodies shall be informed.

6.8.2 Issue and Withdrawal of QAR Notifications

The Quality Assessment Report shall be issued for a period not exceeding 3 years.

IECEX Certification Bodies shall register the QAR on the official IECEX Website in accordance with Operational Document OD 011 Part 2. This On-line registration provides the following summary information, which is publicly available.

- QAR reference number
- ExCB conducting the audit
- Audit Client
- Manufacturer and audit location(s)
- IECEX Certificates of Conformity covered by the audit report
- Details of Major Non-conformances raised (if any)
- Comments of the ExCB if any

In addition, IECEX Certification Bodies shall inform the IECEX Secretary of any IECEX Certificates that are to be suspended, withdrawn or cancelled. This will ensure that other IECEX Certification Bodies are informed of all Certificates that are issued and withdrawn.

7 Competence of quality management system auditors to perform IECEx related audits

7.1 Introduction

In order to ensure that reliance can be placed on the audit process, it is essential that auditors be competent. To become an IECEx product certification auditor, a person needs to demonstrate the competence to conduct audits, i.e. the capability to apply knowledge and skills that are necessary to conduct audits. Personal attributes, education, audit training, work and audit experience are the building blocks for the knowledge and skills needed to be a competent auditor.

These relationships are shown in figure 4.

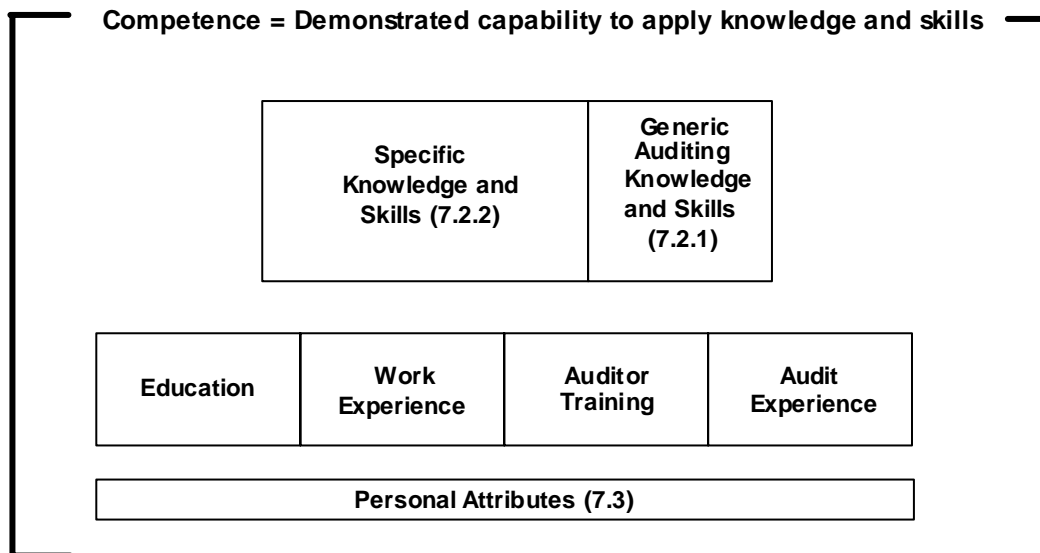


Figure 4 - Relationship between the various elements of product certification auditor competence

In addition to describing the building blocks this clause outlines the knowledge and skills needed to become:

- a) an IECEx product certification auditor with knowledge and experience in assessment and auditing of quality management systems;
- b) an IECEx audit team leader.

This clause also describes a process for evaluating product certification auditors and audit team leaders that occurs at various stages (see figure 5).

The evaluation process described should first be used to conduct the initial evaluation of a person who wishes to become a product certification auditor.

Providing competent auditors is only the first step towards ensuring the reliability of the audit process. The second step is selecting the appropriate auditor(s) for the audit team to ensure audit team competence for a specific audit. The evaluation criteria described in table 3 should be used for selecting auditors to a specific audit team. The audit team selection process is described in more detail in sub-clause 6.2.3.

Finally, auditors should maintain and improve their competence through professional development and participation in audits and keeping up to date with Ex technologies and Standards. On-going evaluation of auditor performance should be used to identify opportunities for maintenance and improvement of competence.

Figure 5 illustrates the relationship between the initial evaluation of an auditor, audit team selection, continuing professional development, maintenance of auditing ability and the continual process of auditor evaluation.

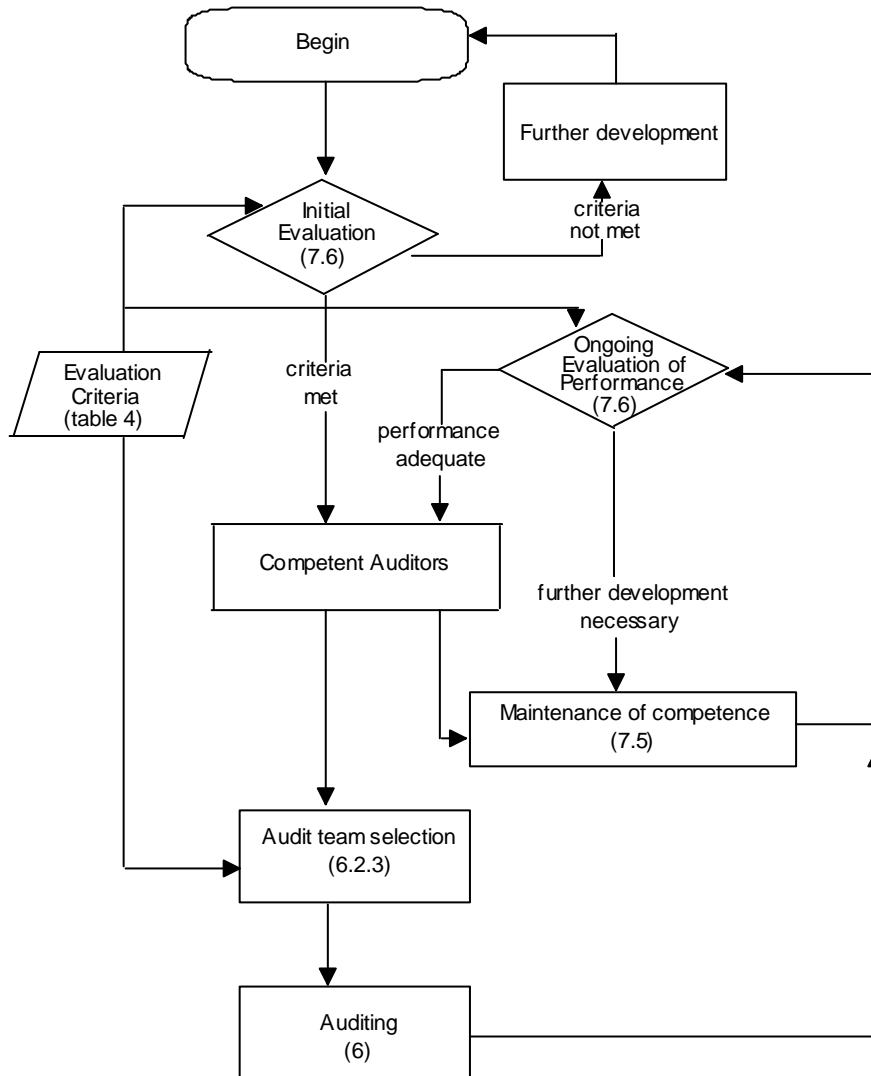


Figure 5 - Initial and on-going evaluation of auditors and audit team selection

7.2 Knowledge and skills

Sub-clauses 7.2.1 and 7.2.2 covers the knowledge and skills that apply to IECEx product certification auditors.

7.2.1 Generic Auditing knowledge and skills of quality management system auditors

Product certification auditors should have knowledge and skills in the following areas:

a) audit procedures, tools and methods - to enable the auditor to select and apply those appropriate to different audits and ensure that audits are conducted in a consistent and systematic manner. An auditor should be able to:

- apply audit procedures, tools and methods;
- plan and organise the work effectively;
- conduct the audit in a timely manner;
- prioritise and focus on matters of significance;
- collect information through effective interviewing, listening, observation, reviewing documents, including records;
- verify the accuracy of collected information;
- confirm the sufficiency and appropriateness of audit evidence to support audit findings and conclusions;
- assess audit risk;
- understand the appropriateness and consequences of using sampling techniques;
- record audit activities through work documents;
- prepare audit reports that are clear and concise;
- hold information confidential;
- communicate effectively, either through personal linguistic skills or through the support of a competent interpreter.

b) management system and reference documents - to enable the auditor to comprehend the scope of the audit and apply audit criteria. Knowledge and skills in this area should cover:

- application of management systems to different organisations;
- interaction between the components of the management system;
- quality management system standards, applicable procedures or other management system documents used as audit criteria;
- differences between and priority among the reference documents;

- application of the reference documents to different audits;
 - information systems and technology for the management, authorisation, distribution and control of documents, data and records.
- c) organisational situations - to enable the auditor to comprehend the auditee's operational context. Knowledge and skills in this area should cover:
- organisational size, structure, functions, and interrelationships;
 - general business processes and related terminology;
 - cultural and social customs of the auditee;
 - language of the auditee.
- d) applicable laws, regulations and other requirements relevant to the discipline to enable the auditor to work within, and be aware of the requirements that apply to the organisation being audited. Knowledge and skills in this area should apply to:
- contracts and agreements;
 - labour, workplace safety, and working conditions;
 - activities products and services;
 - international treaties and conventions;
 - production environment.

7.2.2 Specific knowledge and skills of product certification auditors

Product certification auditors should have knowledge and skills in the following:

- a) product quality related methods and techniques - to enable the auditor to examine those aspects a quality management system relevant to the production of Ex products and to generate appropriate audit findings and conclusions. Knowledge and skills in this area should include:
- quality terminology;
 - quality management principles and their application;
 - product quality plans and their application as part of an overall quality management system
 - quality tools and their application (for example statistical process control, failure mode and effect analysis, etc).

- b) products, including services, and operational processes, to enable the auditor to comprehend the technological context in which the audit is being conducted. Knowledge and skills in this area should include:
- Ex terminology;
 - critical characteristics of Ex related processes and products, including services;
 - Ex product assessment and testing processes and practices.
 - Up to date knowledge of IEC standards relating to products covered by the IECEx Scheme

Auditors should have:

- not less than 3 years recent experience working directly with or associated with certified products;
- an understanding of the IECEx Scheme, associated terminology and relevant Standards;
- an understanding of critical characteristics of processes and products;
- an understanding of sector IECEx processes and practices.

7.3 Personal attributes

Personal attributes contribute to the successful performance of an auditor. An auditor should be:

- a) open minded - willing to consider alternative ideas or points of view;
- b) diplomatic - tactful in dealing with people;
- c) observant - constantly and actively aware of physical surroundings and activities;
- d) perceptive - instinctively aware and able to understand and adapt to situations;
- e) tenacious - persistent, focused on achieving objectives;
- f) decisive - reaching timely conclusions based on logical reasoning and analysis;

- g) self-reliant - acts and functions independently while interacting effectively with others;
- h) ethical - fair, truthful, sincere, honest and discreet.

7.4 Education, work experience, audit training and audit experience

7.4.1 Introduction

This sub-clause describes the building blocks needed to acquire the knowledge and skills described in sub-clause 7.2. Table 1 provides the recommended levels of education, work experience, auditor training and audit experience. Table 1 can be used to establish the evaluation criteria in Table 3. The appropriate levels can vary and will depend on:

- the overall competence of the individual;
- the objectives and scope of the audit programme;
- size, nature and complexity of the organisation to be audited;
- certification/registration requirements; and
- complexity of the management system.

7.4.2 Product Certification Auditor

To acquire the knowledge and skills necessary to become a product certification auditor a person should have:

- a) Education - completed an education sufficient to permit the acquisition of knowledge and skills defined in clause 7.2.
- b) Work experience - work experience in a technical, managerial or professional position involving the exercise of judgement, problem solving and communication with other managerial or professional personnel, peers, customers and/or other interested parties.

Part of the work experience should be in a position where the activities undertaken contribute to the development of knowledge and skills in the quality management field.

- c) Auditor training - undergone training that contributes to the development of the knowledge and skills described in sub-clause 7.2.1. Training may be provided by the person's own organisation or by an external organisation.
- d) Audit experience - gained experience in the audit activities described in clause 6. The overall audit experience should cover the complete audit

process and the entire quality management system standard. This experience should have been gained under the supervision and guidance of an audit team leader in the same discipline. This on-the-job training should be current.

NOTE In exceptional cases, e.g. where the audit programme or quality system Standard has been recently introduced, alternative methods may be considered to provide guidance and supervision to the auditor-in-training. However, in such cases care should be taken to ensure that the overall reliability of the audit process is not impaired.

7.4.3 Audit team leader

Prior to assuming responsibility for leading an audit team an auditor should:

- a) demonstrate the knowledge, skills and personal attributes necessary for effective leadership and efficient management of the audit. This includes planning, organising, directing, performing and reporting audits;
- b) have performed the additional audits recommended in Table 1 acting as an audit team leader under the supervision and guidance of another auditor who is competent as an audit team leader;
- c) be able to reach audit conclusions on the overall capability of the quality management system.

Table 1 - Recommended education, training and work and audit experience

	Product Certification Auditor (see note 3)	Additional audit experience for an audit team leader
Education	Secondary education (see note 1)	No additional recommendations
Total work experience	5 years (see note 2)	No additional recommendations
Quality work experience	at least 2 years of the total 5 years	No additional recommendations
Auditor training	40 hours of audit training	No additional recommendations
Audit experience	4 complete audits in any field and not less than 9 days of audit experience as an auditor in training. The audits should be completed within the last three consecutive years	3 complete audits and not less than 12 days of audit experience acting in the role of an audit team leader. The audits should be completed within the last three consecutive years.

NOTE 1 Secondary education is that part of a national educational system that comes after the primary or elementary stage, but that is completed prior to entrance to an university or similar educational institution. Plus a recognised qualification in a relevant technical subject.

NOTE 2 The number of years of work experience may be reduced by one year if the person has completed appropriate post-secondary education.

NOTE 3 Where an audit is conducted by a sole auditor, then that auditor should have all the competencies of an audit team leader.

7.5 Maintenance and improvement of knowledge and skills

7.5.1 Continuing professional development

Continuing professional development is concerned with maintenance and improvement of knowledge and skills. Auditors should demonstrate their continuing professional development.

The continuing professional development activities should take into account changes in the needs of the individual and the organisation, the practice of auditing, standards and other requirements.

This can be achieved through a number of means such as additional work experience, training, private study, coaching, attendance at meetings, seminars and conferences or other relevant activities.

7.5.2 Maintenance of auditing capability

Auditors should maintain and demonstrate their auditing capability through regular participation in quality related audits, e.g. ISO/IEC Guide 62, 65, ISO/IEC 17025 and ISO 14000 are examples.

7.6 Auditor evaluation process

The initial and continual evaluation of product certification auditors and audit team leaders should be planned, implemented and recorded in accordance with audit programme procedures to provide an outcome that is objective, consistent, fair and reliable. The evaluation process should ensure auditing capability, Ex knowledge and identify training and other skill enhancement needs.

Evaluation can be undertaken by a person or a panel utilising methods listed in Table 2. Table 3 illustrates the application of these methods to the evaluation of auditor competence.

The evaluation process occurs at different stages as illustrated in figure 5. Evaluation criteria (see Table 3), appropriate to the situation should be developed for each evaluation.

The process begins with the identification and initial evaluation of persons who wish to become product certification auditors in the Ex field.

Further, an evaluation of the competence of a product certification auditor occurs as part of their selection for a specific audit. The audit team selection process is described in clause 6.2.3.

The on-going evaluation of auditor performance to identify opportunities for maintenance and improvement of knowledge and skills is also a part of the auditor evaluation process.

Where the evaluation criteria are not met, additional training, work and/or audit experience are required. Following this there should be confirmation that the evaluation criteria have been met.

The methods for obtaining the information to compare against the criteria should be identified, see Tables 3 and 4. In using Tables 3 and 4, the following should be noted:

- the methods outlined represent a range of options and may not apply in all situations;
- the reliability of the various methods outlined can differ;
- typically, a combination of methods should be used to ensure an outcome that is objective, consistent, fair and reliable.

Table 2 - Evaluation Methods

Evaluation Method	Objectives	Examples
Records review	Records are reviewed to verify the background of the auditor	Analysis of records of education, training, employment, Ex experience and audit experience
Interview	Interviews are used to evaluate personal attributes, communication skills, verify information, test knowledge of both Ex and auditing processes, acquire additional information	Face to face and telephone interviews
Observation	Observation is used to evaluate personal attribute and the application of skills and knowledge	Role playing, witnessed audits, on the job performance
Post audit review	Post audit review is used where direct observation may not be possible or appropriate	Review of audit reports, debriefing with colleagues and clients, debriefing with the auditor
Testing	Testing is used to evaluate personal attributes and	Oral and written exams, psychometric testing



Evaluation Method	Objectives	Examples
	knowledge and skills and their application	
Feedback	Feedback (positive and negative) is used to provide information about how the performance of the auditor is perceived.	Surveys, questionnaires, personal references, testimonials, complaints

Table 3 - Examples of methods for evaluating auditor competence

Evaluation Criteria	Evaluation Method	Audit procedures, tools and techniques	Management systems and reference documents	Organisational situations	Relevant laws, regulations and other requirements	Quality related methods and techniques	Ex Products, services, and operational processes	Technical aspects of operations
Relevant Education (including Ex training)	Review records of education							
	Obtain feedback from instructors or educational institutions							
Relevant work Experience (including Ex experience)	Review records of Employment							
	Obtain feedback from employers and supervisors							
Completion of relevant training course(s)	Review training records: course content and result							
	Obtain feedback from the training course provider							
Personal attributes	Psychometric testing							
	Interview the auditor							
	Obtain feedback from the audit team leader and other members of the audit team							
	Obtain feedback from audit clients							
	Witness the person perform an audit(s)							
Completion of an auditor training course	Review training records: course content and result							
	Obtain feedback from the training course provider							
Examination(s) results	Review test results							
Audit experience: number of audits and audit days, complexity and type of audits completed	Review records of participation such as audit logbooks, audit reports							
Auditor performance	Observe the person conduct audit(s)							
	Conduct post audit review(s)							
	Obtain feedback from the audit team leader and other members of the audit team							
	Obtain feedback from audit clients							

NOTE In this table the dark shaded areas indicate the evaluation method and evaluation criteria that should apply to evaluate the knowledge and skills