IECEx OD 503

Edition 5.0 2022-09

IECEx OPERATIONAL DOCUMENT

sion

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

ExCB Procedures for issuing and maintaining IECEx Certificates of Personnel Competencies

IECEx OD 503:2022(E)

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ExCB Procedures for issuing and maintaining IECEx Certificates of Personnel Competencies

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IECEx Operational Document 503

IECEx Scheme for Certification of Personnel Competence for Explosive Atmospheres

ExCB Procedures for issuing and maintaining IECEx Certificates of Personnel Competence

This Operational Document, OD 503 sets out the requirements for Personnel to be certified to perform activities / functions according to an applicable IECEx Unit(s) of Competence.

Use of this OD 503 is necessary for the IECEx Scheme to adequately assign the relevant Personnel Competence assessed.

Document History

Date	Summary
October 2009	Original issue (Edition 1.0)
April 2013	Edition 2
September 2014	Edition 3 Published to include details of Ex000 and revisions of Table 2
September 2015	Edition 3.1 Published to incorporate the principles of Edition 1.0 and other revisions in response to discussions at 2015 meeting of ExPCC – these are indicated by red margin bars
September 2016	Edition 4.0 Published to incorporate the decisions of the 2016 ExPCC Meeting – these are indicated by margin bars
October 2017	Edition 4.1 Published to incorporate the decisions of the 2017 ExPCC Meeting as approved at the 2017 ExMC Meeting –refer ExMC/1298/DL, Decision 2017/66
September 2021	Edition 4.2 Published to align with IECEx OD 504 Edition 4.0
September 2022	Edition 5.0 published to add requirements for the Unit Ex 011 regarding hydrogen to Table 3 and additional requirements for practical assessments in Clause 4.3.4

This redline version is provided to illustrate the differences between this Edition and the previous Edition and displays new text as green underlined text and deleted text as ~~red struckthrough~~ text.

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INTRODUCTION

This 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 Personnel Competence (CoPCs) and Ex Facility Orientation Certificates (EFOCs).

The purpose of this Operational Document is to ensure that each ExCB, accepted by the ExMC for the purposes of issuing IECEx CoPCs and EFOCs, processes applications from individuals, or organisations nominating individuals, in a consistent harmonious manner.

This IECEx Operational Document comprises procedures for the issuing and maintenance of IECEx Certificates of Personnel Competence (CoPCs) and Ex Facility Orientation Certificates (EFOCs).

The procedures are set out in flowchart and table form identifying:

- Step number showing the link between flowcharts and table
- Description of the activity
- Related documents
- Responsible person or party
- Additional comments and remarks where appropriate

The preparation of this document has been done so with the aim of alignment with various ISO/IEC International Standards and Guides, including but not limited to the following:

ISO/IEC 17024, *Conformity Assessment – General requirements for bodies operating certification of persons*

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ExCB Procedures for issuing and maintaining IECEx Certificates of Personnel Competence

1 Scope

This operational document specifies the requirements for the ExCB assessment procedures for the purposes of issuing and maintaining a CoPC or an EFOC for personnel involved in activities such as, but not limited to:

- basic knowledge and awareness to enter a site that includes a classified hazardous area
- application of basic principles of protection in explosive atmospheres
- the classification of hazardous areas
- installation of explosion-protected equipment and wiring systems
- maintenance of equipment in explosive atmospheres
- overhauling and repairing explosion-protected equipment
- testing electrical installations in, or associated with, explosive atmospheres
- conducting visual and close inspection of electrical installations in or associated with explosive atmospheres
- conducting detailed inspection of electrical installations in or associated with explosive atmospheres
- designing electrical installations in or associated with explosive atmospheres
- conducting audit inspection of electrical installations in, or associated with, explosive atmospheres

This Operational Document shall be read in conjunction with the Basic Rules of the IECEx System, as defined in IEC CA 01 and IECEx 01-S and the IECEx 05, Rules of Procedure of the IECEx Scheme for Certification of Personnel Competence for Explosive Atmospheres.

2 Normative References

The following publications contain provisions, which, through reference in this text, constitute provisions of this Operational Document. The Ex Management Committee shall decide the timetable for the introduction of revised editions of the publications.

- ISO/IEC 17024 *Conformity Assessment – General requirements for bodies operating certification of persons*
- IECEx 05, *IECEx Scheme for Certification of Personnel Competence for Explosive Atmospheres – Rules of Procedure*
- IECEx OD 502, *Application for an IECEx Certificate of Personnel Competence (CoPC), documentation and information requirements*
- IECEx OD 504, *Specification for Units of Competence Assessment Outcomes*

3 Principles of the IECEx Certification of Personnel Competence Scheme

3.1 Operational Document application

This Operational Document is to be applied by ExCBs when processing new applications for the issue of an IECEx CoPC or an EFOC and undertaking a review for maintaining an existing IECEx CoPC.

These steps follow the principles outlined in ISO/IEC 17024, *Conformity Assessment – General requirements for bodies operating certification of persons*, in addition to the requirements as specified in the IECEx Scheme Rules of Procedure, IECEx 05.

3.2 Assessment process

In the assessment of an applicant for a Certificate of Personnel Competence both *Figures 1A* (which applies for EFOCs) *and Figure 1B (which applies for CoPCs) – The pathway to obtaining an IECEx CoPC*, and the associated *Table 1 – Procedures for the issuing of an IECEx CoPC* shall be applied as appropriate for each type of Certificate.

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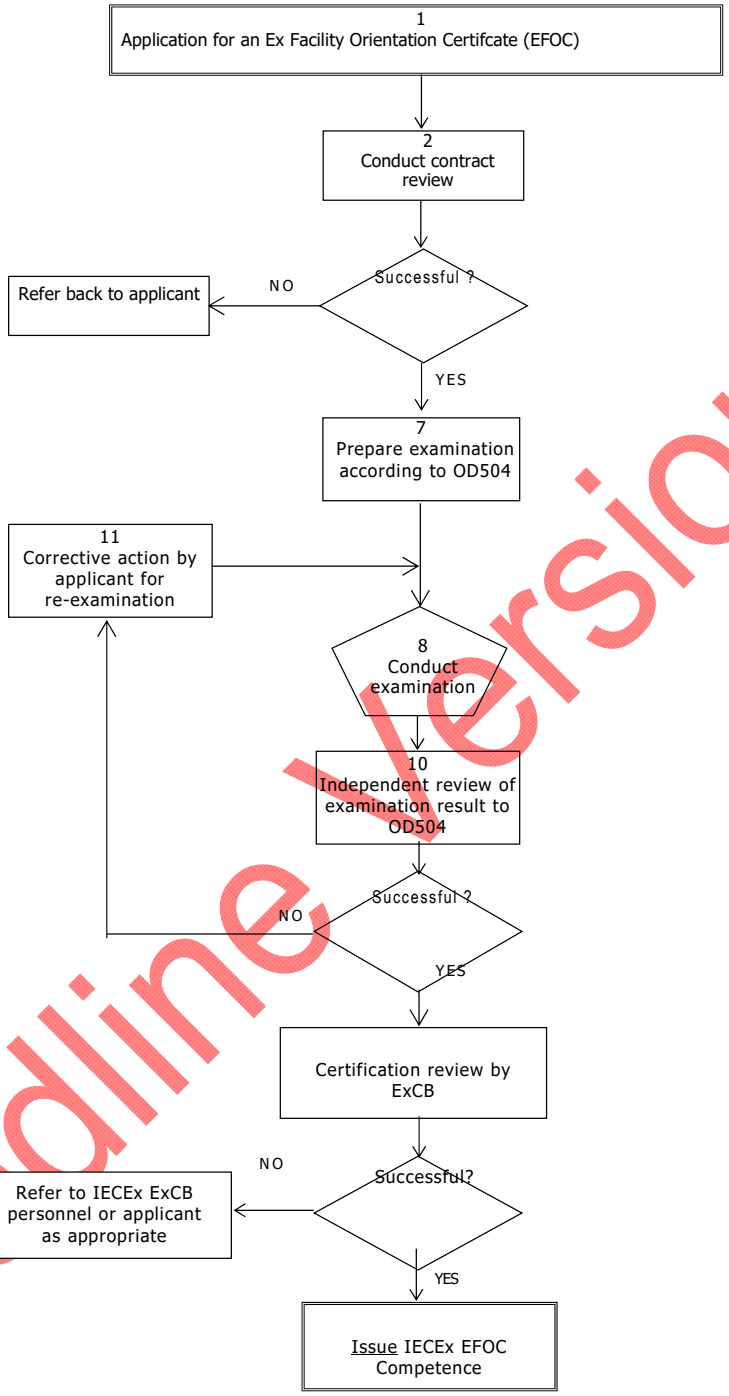

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Figure 1A – The pathway to obtaining an IECEx EFOC for Unit Ex 000 only

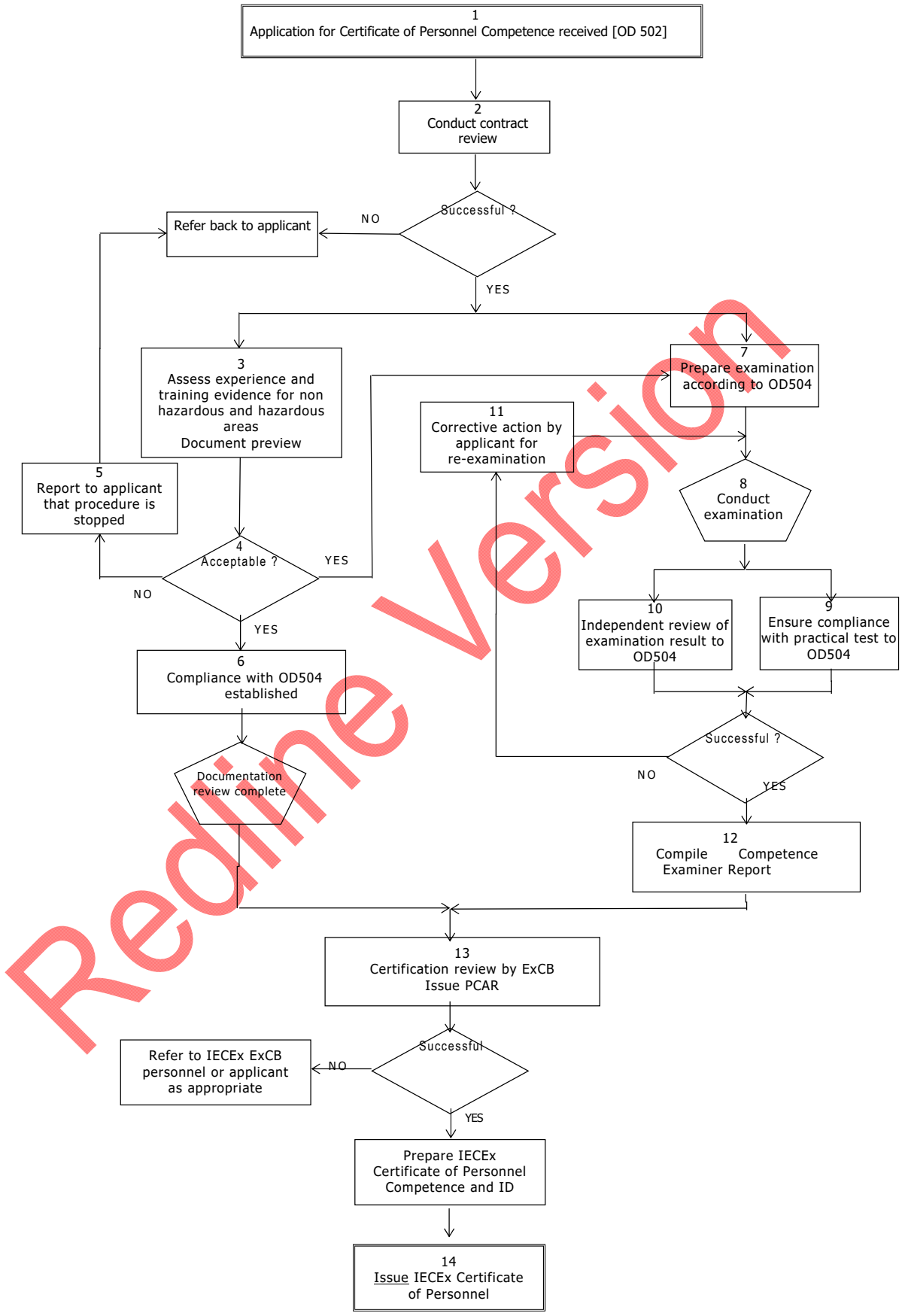

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Figure 1B – The pathway to obtaining an IECEx CoPC Units 001 to 011~~0~~ inclusive

Table 1 – Procedures for the issuing of an IECEx CoPC

Step	Procedures for the issuing of an IECEx Certificate of Personnel Competence Description of activity	Related Documents	By whom	Notes/Comments
	INITIAL ASSESSMENT			
1.	Application in accordance with IECEx OD 502 submitted by an individual to an ExCB that has been accepted by the IECEx Management Committee under the IECEx Certification of Personnel Competence Scheme.	IECEx 05	The individual applicant	In the application for an IECEx CoPC the applicant will provide the initial evidence of compliance with the requirements of this IECEx Scheme and relevant Operational Documents.
2.	Contract review to be conducted by the ExCB receiving the application and shall include: • A review to ensure that the application is within the scope of acceptance of the ExCB • Confirming receipt of the applicants experience log • Confirming receipt evidence of applicants training record and qualifications • Determining whether a surcharge applies for applicant from non IECEx member countries refer to IECEx OD 019 • Estimation of time and costs to complete project • Establishing if there are any special requirements, for example, travel, translation of documentation etcetra. • Agreement on method and system of payment by applicant, in accordance with ExCB's own policy and quality system. ExCB shall communicate in writing to the applicant if the application is unsuccessful and the applicant is free to amend the application. The ExCB shall only proceed where the contract review has been successfully completed	ExCB's own Certification procedures as included in their Quality System and ISO/IEC 17024	ExCB	The results of the contract review shall be documented and recorded. Both the experience/training and examination elements are compulsory for a complete assessment.
3.	The ExCB receiving the application shall conduct an evaluation of the pre-requisite requirements, for the competence being assessed, as detailed in IECEx OD 502, Application for a CoPC. The ExCB shall ensure that evidence of the pre-requisites (for example, qualifications / training / experience etcetra) is available and that all work experience to be considered is verified by qualified individuals.	IECEx OD 504	ExCB that received the application	The assessment is conducted by the ExCB. The ExCB shall have procedures covering new applications and extension of scope. Where the pre-requisite evidence is provided by the applicant it is to be validated by a third party.

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4.	Given that the evaluation of the documentation is satisfactory then the individual applicant is approved for the Ex assessment of competence. Where an ExCB has conducted a competence assessment of a person prior to an application being lodged, the ExCB may use all or part of the results from that assessment provided this information is no more than three (3) years old and only if it is shown that the assessment was carried out in accordance with the requirements of this Scheme.			Any discrepancies or shortcomings in the documentation shall be resolved before proceeding. This process step acknowledges the concept of the recognition of prior learning (RPL) as a foundation principle of the IECEx CoPC Scheme.
5.	Incomplete or lack of documentation shall result in the applicant being notified in writing that the assessment cannot proceed.		ExCB and Applicant	
6.	The ExCB shall use the appropriate assessment methods suitable for the competence sought as detailed in IECEx OD 504 Competence Outcomes. This may include written examinations, witnessing practical skills, oral examination etcetra under controlled conditions.		ExCB and Applicant	
7.	Examination content shall be as given in IECEx OD 504 Competence Outcomes. Where required by Clause 4, the ExCB shall have procedures to ensure that choice of examination questions and/or practical exercise is made independently and impartially. The requirements of ISO/IEC 17024 shall be followed by the ExCB, particularly with variation of multiple choice questions etcetra.		ExCB	
8.	The assessment content shall be selected and conducted independent of any training or training provider.		ExCB	The ExCB shall have procedures to confirm the identity of the candidate to ensure that an individual receiving a CoPC or an EFOC can be shown to be the same person who was assessed for that Unit of Competence.
9.	The ExCB shall observe any criteria given in IECEx OD 504, Competence Outcomes against which to assess if competence has been achieved.	Industry standard/ professional guidance	ExCB	
10.	The ExCB shall arrange for an independent review of the completed assessment/s. This review shall be conducted by a qualified person not involved in the original assessment.		ExCB	
11.	Where the independent review raises questions that need to be resolved, these shall be referred to the original assessor for clarification, correction, or further action.		ExCB	
12.	The results of the assessment shall be recorded in the PCAR.		ExCB	
13.	The PCAR is then registered in the IECEx On-line Certificate System in accordance with IECEx 05 and IECEx OD 011-5.		ExCB	

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14.	Based on a successful PCAR the Certificate/ID Card is then issued in accordance with IECEx 05.		ExCB	ID Card is issued by the IECEx Secretary following advice from the ExCB The ExCB shall retain records of assessments, recommendations, and certification decisions for individuals for at least 3 years from the date of the certificate no longer being valid.

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	PERIODIC REVIEW			
	The ExCB shall also periodically review assessment content to ensure consistency and understanding of tasks and questions set. Where appropriate the ExCB shall address any known issues that arise (such as rewriting questions that can be misconstrued) and where appropriate provide feedback to the Scheme.		ExCB	The ExCB shall have procedures covering complaints and appeals, and withdrawal, cancellation and suspension of a certificate. Where such complaints and appeals cannot be resolved between the applicant and the ExCB either party has the option to make an appeal in accordance with IEC CA 01 and IECEx 01-Saccording to IECEx 01.
	SURVEILLANCE			
	The ExCB shall consider any feedback from the employer or other parties, and if necessary, take steps to correct, withdraw or cancel certification.		ExCB	Notify IECEx Secretariat
	The ExCB shall have procedures for managing situations of use and misuse of certificates.		ExCB	Notify IECEx Secretariat

3.3 Re-certification and Re-assessment process

In the assessment of an applicant for a Certificate of Personnel Competence for the purposes of re-certification of a holder of IECEx CoPC the following Figure 2 and associated Table 2 shall be applied.

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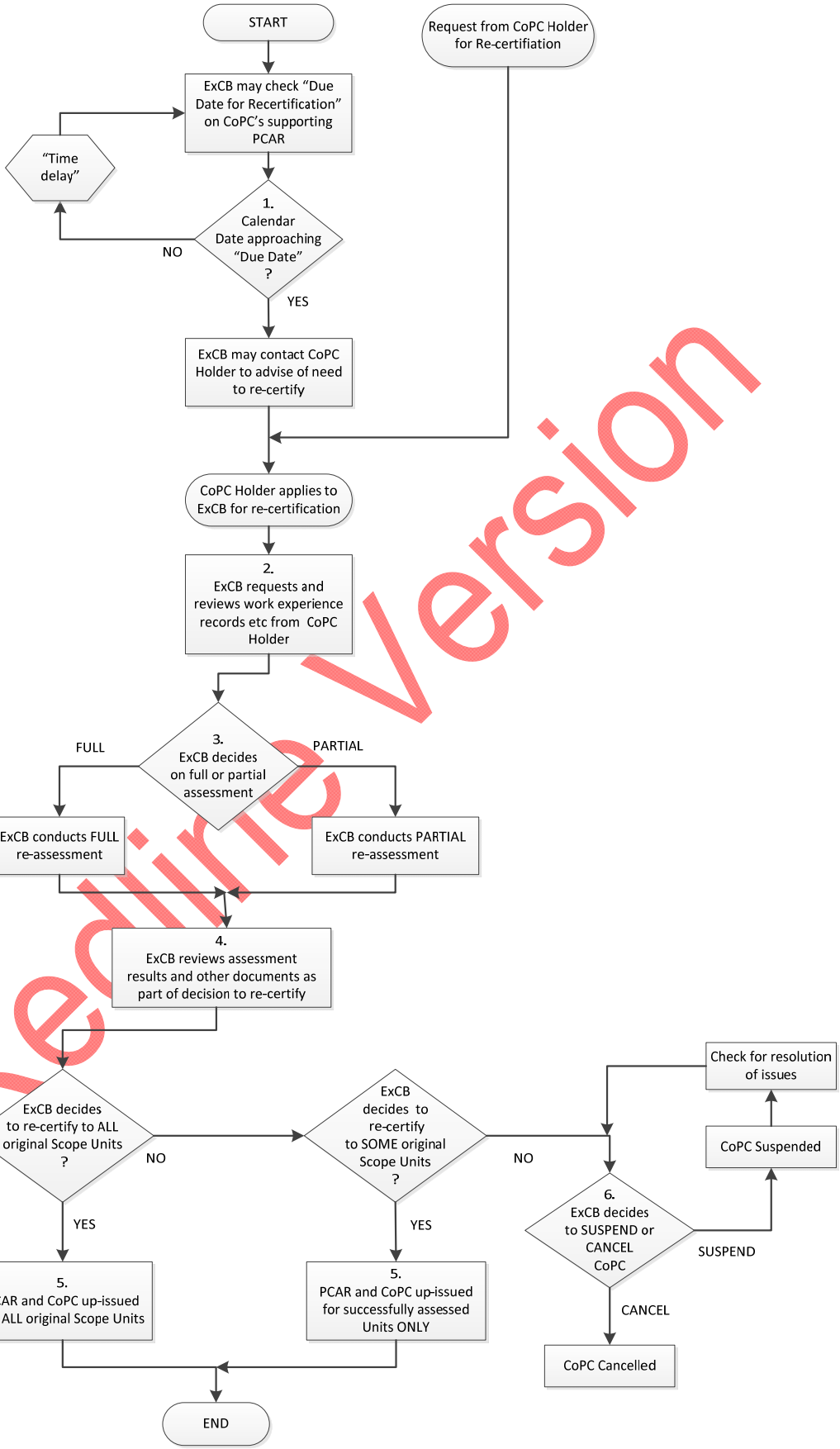

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Figure 2 – IECEx CoPC Re-certification Process

Table 2 – Procedure for the Re-certification of IECEx CoPC Applicants

	RE-CERTIFICATION			
1.	Before the expiry of five (5) years from the date of issue of the PCAR a re-assessment of the Unit(s) of Competence included in the PCAR and Certificate shall be undertaken for the purpose of re-certification. The holder of the IECEx CoPC is responsible for contacting the issuing ExCB to arrange for re-certification. The ExCB may contact the Person holding an IECEx CoPC prior to the expiry date of the CoPC to advise them of the need for re-assessment and to provide information on the re-certification process.		ExCB or CoPC Holder / Applicant	
2.	The re-assessment requirements shall be determined by the ExCB following a review of existing certifications, recent relevant work experience and the scope of certification requested by the applicant.			
3.	In determining the re-assessment requirements, the ExCB may decide to up-issue the certificate with a 'partial assessment' (that is, <u>not</u> a full assessment according to the requirements of IECEx OD 503) if there is evidence that the candidate's competence has been maintained and updated and also allows for the situation where the candidate may not have been involved in relevant practical application of activities under all Units of Competence over the full five (5) year period. In the use of a 'partial assessment' approach the ExCB shall assess the candidate's awareness and understanding of all new IEC Standards and changes to IEC standards relevant to their scope of Certification that have been published in the five years since certification or since the most recent recertification. In this process the ExCB shall confirm that, where changes to relevant Standards have occurred during the previous five-year period, the person: • Is aware of the changes • Provides evidence of a demonstrated understanding and implementation of the changes Where no changes to relevant Standards have occurred during the previous five (5) year period, the ExCB shall review the work record over the period to confirm the maintenance of the person's ability to understand the current editions of all relevant Standards. The partial assessment approach shall only be used <u>once</u> for re-assessment and re-certification for a particular Unit of Competence			

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4.	The ExCB may consider some or all of the following documents in determining the assessment requirements to support a decision to the re-certify the person: i. Internal / external training records ii. Details of relevant practical work and experience during the previous five (5) year period iii. Outcomes of an interview of the person iv. The results of assessments to additional modules conducted during the previous five (5) year period – these can assist in assuring that the person has maintained basic Ex knowledge If the ExCB is not satisfied that the person has provided sufficient evidence of continued competence through documents such as those listed above, full re-assessment shall be conducted by the ExCB.		ExCB	
5.	Successful completion of all re-certification requirements shall result in the relevant PCAR being up-issued with a new "Date of Issue of this PCAR", and the associated IECEx CoPC Certificate up-issued. If the re-assessment has not been successful for all Unit(s) of Competence listed on the original PCAR (for reasons such as failure of the assessment or insufficient work experience in the Unit(s) of Competence since the last re-assessment) the PCAR may be up-issued with the unsuccessful Unit(s) removed from the PCAR and from the Certificate that this PCAR supports.		ExCB	
6.	If the re-assessment is not completed satisfactorily the Certificate shall either be suspended until all matters are resolved OR the Certificate shall be cancelled.		ExCB	

4 Assessment

4.1 Objectives

4.1.1 Attributing competence

Competence shall be attributed based on evidence demonstrating that the person, so deemed competent, is able to undertake the responsibilities for all safety measures, care of plant and equipment, and care of the environment, directly related to the work function for which such competence are required.

NOTE: Sufficient sources of evidence of competence will be required where the consequences of unjustifiably or mistakenly deeming a person competent carries a risk of injury to persons, or damage to property and/or the Environment.

4.1.2 Sufficiency of evidence

In all instances, competence shall be attributed on evidence sufficient to show that a person

a) has the necessary skills required for the scope of work, and
b) can act competently across the specified range of activities, and
c) has the knowledge and understanding underpinning competence.

4.1.3 Currency of evidence

Evidence shall be appropriate, recent and suitable for making decisions about what a person knows and can do now and in the immediate future.

NOTE: Attributing competence at a point in time does not mean that competence exists for all time; competence must be maintained.

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4.1.4 Authenticity

Evidence shall be capable of being validated as relating ONLY to the person being assessed and NOT to any other person.

4.2 Sources of evidence relating to pre-requisites

4.2.1 General

Competence shall be attributed based on evidence of essential knowledge underpinning performance and from evidence gathered across the whole range of performance activities relevant to the Unit of Competence that is to be attributed.

4.2.2 Evidence of essential knowledge

4.2.2.1 Assessment methods

Structured assessment methods, such as written, practical, and oral examinations / technical interviews shall be used to gather evidence that a person has the knowledge necessary to support competent performance.

4.2.2.2 Assessment criteria

Assessment shall be based on the extent of essential knowledge specified for each Unit of Competence as detailed in IECEx OD 504.

4.2.3 Evidence of competent performance

Evidence of competent performance shall be gathered by one or more of the methods described in Clauses 4.2.3.1 to 4.2.3.3. The criterion against which the work performance shall be assessed is given in IECEx OD 504.

4.2.3.1 Gathering evidence of performance in a simulated work environment

In this method the simulated work environment shall include equipment relevant to the competence to be assessed and arrangement in a manner similar to a real work-place. Assessment activities shall be as close as practicable to real work situations and include real work decisions by the person being assessed.

4.2.3.2 Gathering evidence of performance directly in the work-place

In this method a qualified examiner shall gather the evidence through direct observation of relevant work activities on multiple occasions and situations.

NOTE: Direct assessment of work activities may not be acceptable in some work-places as it is disruptive to productivity and may require further safety measures.

4.2.3.3 Gathering evidence of performance, from indicators in relevant work experience

In this method evidence shall be gathered through a daily or weekly log of work experience indicators, relevant to the Unit(s) of Competence being assessed; this shall be verified by a qualified responsible person. Such evidence shall be used to form a profile of competence development showing sufficient exposure to work activities and indicating when a final decision about competence can be made.

NOTE: Examiners will need to analyse log entries to evaluate the evidence when making assessment decisions. Computerized log systems provide automated analysis of entries that assists examiners in making consistent decisions. In addition, computerized log systems can provide progress reports that assist in managing the work experience to which the person seeking competence should be exposed.

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4.3 Assessment processes

4.3.1 Knowledge assessment instruments

4.3.1.1 IECEx Question Bank

Knowledge examination questions shall be selected from the IECEx Certification of Personnel Competence Question Bank relevant to the Unit(s) of Competence being assessed.

4.3.1.2 Alternative to the IECEx Question Bank

Where the IECEx Question Bank does not cover the specific Unit(s) of Competence under assessment, the requirements of this Clause shall apply.

Knowledge tests shall be made up of items that sample all the knowledge elements specified for each Unit of Competence in IECEx OD 504.

4.3.1.3 Items in knowledge and practical assessment tests

The following Table 3 defines the minimum number and types of items in a **knowledge test** where limitations of competence apply or where a sampling approach to assessment is used. The quantity of questions has been calculated to ensure that a knowledge assessment can be conducted in accordance with the durations specified Clause 4.3.2 following.

Table 3 also defines the minimum number of assessment questions, exercises or activities that shall be used in **practical skills assessments** in accordance with Clause 4.3.3 following.

Table 3 – Minimum number and type of items

		Knowledge Test			
OD 504 Clause / "Module"	Description	Selected Response	Constructed Response	Total Number of Items	Practical assessment
5.1	The nature of explosive hazards and hazardous areas	6	0	6	n/a~~0~~
5.2	Occupational health and safety responsibilities related to hazardous areas	6	0	6	n/a~~0~~
5.3	Explosive atmospheres and explosion-protection principles	6	0	6	0
5.4	Explosion-protected equipment – Ex certification schemes	6	2	8	0
5.5	Explosion-protected equipment – Principles	4	1	5	0
5.6	Explosion-protection visual checks	8	2	10	0
5.7.1	Explosive atmospheres classification techniques - Gas	10	2	12	0
5.7.2	Explosive atmospheres classification techniques - Dust	6	2	8	0
5.8	Hazardous area classification work performance – Gas and /or Dust	0	0	0	3 for Gas &/or 3 for Dust
5.9	Flameproof (Ex 'd') explosion-protection technique	3	2	5	0

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5.10	Increased safety (Ex 'e') explosion-protection technique	3	2	5	0
5.11	Type of protection 'n' (Ex 'n')	2	1	3	0
5.12	Encapsulation (Ex 'm') explosion-protection technique	1	1	2	0
5.13	Oil / Liquid immersion (Ex 'o') explosion-protection technique	1	1	2	0
5.14	Powder filled (Ex 'q') explosion-protection technique	1	1	2	0
5.15	Intrinsic safety (Ex 'i') explosion-protection technique	4	2	6	0
5.16	Pressurization (Ex 'p') explosion-protection technique	2	1	3	0
5.17	Dust protection by enclosures (Ex 't') explosion-protection technique	2	1	3	0
5.18	Intrinsic safety (Ex 'iD') explosion-protection technique	see 5.15			
5.19	Pressurization (Ex 'pD') explosion-protection technique	see 5.16			
5.20	Encapsulation (Ex 'mD') explosion-protection technique	see 5.12			
5.21	Common characteristics of explosion-protection techniques	1	1	2	0
5.22	Explosive atmospheres installation requirements	10	2	12	0
5.23	Explosive atmospheres cable termination techniques	6	2	8	0
5.24	Hazardous area installation work performance	0	0	0	12
5.25	Hazardous area maintenance work performance	0	0	0	6
5.26	Hazardous area operations reporting work performance	0	0	0	4
5.27	Explosive atmospheres maintenance requirements	10	2	12	0
5.28	Explosive atmospheres management	4	2	6	0
5.29	Hazardous area maintenance work performance	0	0	0	6
5.30	Explosion-protected equipment overhaul and repair – General requirements	14	2	16	0
5.31	Explosion-protected equipment overhaul and repair specific to each technique (# questions per Protection concept)	3	1	4	0
5.32	Explosion-protected equipment overhaul and repair work performance – operative	0	0	0	10
5.33	Explosion-protected equipment overhaul and repair work performance – Responsible Person	0	0	0	4
5.34	Explosive atmospheres installation testing	6	2	8	0
5.35	Hazardous area installation testing work performance	0	0	0	6
5.36	Explosive atmospheres visual and close inspection requirements	6	2	8	0
5.37	Hazardous area visual and close inspection work performance	0	0	0	6
5.38	Explosive atmospheres detailed inspection techniques	14	2	16	0
5.39	Hazardous area detail inspection work performance	0	0	0	6
5.40	Explosive atmospheres installation planning	8	4	12	0
5.41	Common classified explosive atmospheres	6	4	10	0
5.42	Explosion-protected electrical systems design	10	4	14	0
5.43	Hazardous area installation design work performance	0	0	0	3
5.44	Explosion-protected electrical system design work performance	0	0	0	5
5.45	Hazardous area auditing processes	6	2	8	0
5.46	Hazardous area audit inspection work performance	0	0	0	10
5.47	Safety of hydrogen systems	20	4	24	n/a

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4.3.2 Content and duration of knowledge tests

The duration of a knowledge test shall be based on the following:

- **Selected response** items:
  - Selected Response (also referred to as “multiple choice” type): 2 minutes per item.
  - Multiple choice questions shall consist of 1 correct answer and 3 distractors

- **Constructed response** items:
  - Short answer: 3 minutes per item
  - Extended short answer: 5 minutes per item
  - Calculations: 3 minutes per item

  NOTE: The item test duration times specified above may be increased at the discretion of the ExCB by a maximum of 1 minute per item in the situation that a candidate whose native language is NOT English is being assessed using questions in the English language

There shall be a reading time of 10 minutes allowed to the candidate prior to the commencement of each test.

Where multiple Units of Competence are assessed during the same assessment activity the questions used on one Unit of Competence need not be repeated in the assessment of subsequent Units of Competence.

It is intended that the ExCB will conduct a written examination, however this does not preclude the option of conducting the examination orally and fully documenting the results according to ISO/IEC 17024. For an oral examination, both the candidate and examiner shall be in the same room.

4.3.3 Duration of practical skills assessment

The duration of a practical skills assessment should not exceed four hours however this will depend on the Unit(s) of Competence requested and the limitations associated with that Unit, for example protection concepts equipment types, voltages, etcetra. The practical skill tests shall include all relevant requirements for the Unit(s) of Competence and limitations being assessed as defined by IECEx 0D 504 in accordance with Table 3 above.

4.3.4 Skills assessment instruments

Practical examinations to assess skills shall contain sufficient artefacts to verify competence for each protection concept, product type and voltages as listed by the applicant and the Critical Aspects of Evidence as they align with the performance criteria specified for each Unit of Competence in IECEx OD 504.

The minimum number and types of artefacts in a practical examination will depend on the actions and skills to be demonstrated however it is preferred that these represent a full or appropriate range of configurations, defects, faults, etcetra needed to properly assess the candidate according to IECEx OD 504.

Artefacts shall:

- not be presented in the same configuration (note that changing included faults, changing components, application of different labels or similar small but significant changes would constitute a change of “configuration”) for the initial and subsequent assessments.
- be maintained in a state suitable for assessments however variation due to wear is permitted (multiple artefacts may be needed to provide variations representing wear)
- not be of the same configuration as used in any training activities.
- be managed to ensure that the above requirements are satisfied
- where artefacts other than those owned or managed by the ExCB are used for the assessment (for example, at a candidate’s employer’s workshop or at an assessment centre used by the ExCB), the ExCB shall first assess the facility and intended artefacts to verify that these satisfy all above requirements and that the outcomes of this assessment shall be documented as part of the assessment results for the

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candidate(s) to be assessed at this site. In this situation, ExCBs shall have documented procedures for using and managing artefacts (other than those owned or managed by the ExCB) in accordance with ISO / IEC 17024 requirements as outlined in IECEx OD 507.

4.3.5 Assessment results

In deeming a candidate competent an examiner will consider the following results as a minimum requirement:

4.3.6 Knowledge assessment:

The knowledge assessment shall consist of two papers:

- Paper A shall contain no less than the number of selected response questions as specified in Table 3. A correctly answered question shall be scored as a single correct answer (result = 1) and an incorrect answer shall be scored as a 'zero result'. There is no provision for scoring "partially correct" answers with partial scores (for example, result = 0.5). The result of Paper A shall be recorded as the score achieved expressed as a percentage of the maximum available score.

- Paper B shall contain no less than the number of constructed response questions including calculation questions where relevant as specified in Table 3. The maximum score of an individual question is determined by its number of elements – for example, the maximum available score for a question of one element is one and for a question of four elements the maximum available score is four. The result of Paper B shall be recorded as the score achieved expressed as a percentage of the maximum available score.

4.3.6.1.1 Consideration of Knowledge Assessment Results

The assessment result for each assessment shall be considered as follows when an ExCB takes a decision to issue a Certificate to a candidate:

1. The results (the score achieved expressed as a percentage of the maximum available score) of Paper A and Paper B may be averaged and then then compared to the required minimum result of 75%. For example, an assessment result of 85% for Paper A and 70% for Paper B provides an average of 77.5% which represents a pass result because this is greater than the 75% minimum. A PCAR may be issued to a candidate that achieves a pass result and the PCAR can be used to support the issue of an IECEx Certificate of Personnel Competence.

2. If the averaged result for Paper A and Paper B is less than 75% a fail result shall be recorded for the candidate. If the candidate that has had a fail result recorded wishes to re-sit the assessment both Paper A and Paper B shall be repeated.

4.3.6.2 Practical assessment:

At the conclusion of a practical assessment (as agreed by the candidate) all activities shall have been completed according to all relevant Standards, manufacturer's instructions and any other relevant requirements associated with the technology, process, activity (including design and area classification) or equipment being installed, inspected, maintained, or repaired.

4.3.6 Conducting and managing assessment

4.3.6.1 Location and supervision

The knowledge test shall be supervised by an examiner or invigilator under the ExCB's responsibility.

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Practical examinations shall be supervised by an examiner who may also request assistance by a person competent in the Unit of Competence for which the candidate is being assessed. This person shall be acceptable to and managed by the ExCB.

4.3.6.2 Candidate identification and conduct

Before commencement an assessment, the candidate shall present to the examiner or invigilator valid proof of identification.

A candidate who, during an examination, perpetrates, or is an accessory to, fraudulent conduct shall not be issued with a Certificate for Units of Competence related to the specific assessment of concern. This candidate shall be excluded from all further examinations of the specific Units of Competence for a period of one year by all ExCBs (ExCBs are encouraged to communicate if there are suspicions that a candidate is in this situation).

4.3.6.3 Resources

The ExCB shall ensure that all resources needed to conduct a fair examination are available to each candidate.

During an examination, each candidate may use their own copies of IEC, Regional and National Standards, Codes of Practice, Technical Reports relevant to the Unit of Competence for which they are being assessed. Other material may be used during the assessment and is used entirely at the responsibility of the applicant. The use of any form of electronic documentation such as with a computer, PDA, telephone etc. is prohibited.

4.3.6.4 Setting and evaluating assessment instruments

Assessment instrument shall be set independently. The examiner shall evaluate the assessment instrument before it is used to ensure that it meets the requirements of Clauses 4.3.1 and 4.3.4 relevant to the Unit of Competence for which the candidate is being assessed.

4.3.6.5 Assessment outcome

The examiner shall make the judgement that a candidate has clearly demonstrated competence based on the minimum requirement of both the knowledge and practical assessments specified by Clause 4.3.5.

4.3.6.6 Reporting assessment results

An unsuccessful candidate shall be informed of the criteria in which they failed to demonstrate competence so that they may prepare for a subsequent assessment they may wish to take.

4.4 Qualification of examiners

- Tertiary qualification or equivalent and encompassing technical evaluation; or
- Extensive experience in compliance assessment; and
- Essential knowledge and understanding of the application specified in the Units of Competence for which the examiner is designated.

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