

# IECEX Scheme for Certification of Personnel Competence for Explosive Atmospheres – Malaysia Experience

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SIRIM QAS International  
2014 IECEX INTERNATIONAL CONFERENCE  
19 – 20 February 2014  
Kuala Lumpur

# Outline of Presentation

- ❑ Introduction – SIRIM
- ❑ SIRIM QAS International and IECEX Schemes
- ❑ Development of IECEX 05 Certification of Personnel Competence Scheme
- ❑ Certification Process of IECEX 05 Certification of Personnel Competence Scheme
- ❑ Way Forwards

# SIRIM

## September 1975

**SIRIM was established after the merger between  
SIM (Standard Institution of Malaysia)  
NISIR (National Institute for Scientific and  
Industrial Research)**

## September 1996

**SIRIM was corporatized as a wholly-owned  
company of the Malaysian Government under  
the Ministry of Finance Incorporated**

## SIRIM QAS International

- ☐ Established in 1996 as a wholly-owned subsidiary of SIRIM Berhad
- ☐ Provides conformity assessment and testing services since 1970s where these services were undertaken by a division of SIRIM.
- ☐ Staff strength: 700 + +
- ☐ No. of certifications issued: more than 9,000
- ☐ Malaysian based Certification Body
- ☐ Provides services to local and international clients in the countries such as Thailand, Singapore, Brunei, Indonesia, Vietnam, Myanmar Korea, Philippines, China, Taiwan, Japan, India, Sri Lanka, Australia, New Zealand, Germany, Italy and Spain

# Accreditation



MS ISO/IEC 17021 : 2006 QS 02121999 CB 01  
MS ISO/IEC 17021 : 2006 EMS 17122002 CB 02  
MS ISO/IEC GUIDE 65 : 2000 PC 05102004 CB 01  
MS ISO/IEC 17021 : 2006 OSH 06122005 CB 01  
MS ISO/IEC 17021 : 2006 HACCP 05052008 CB 03  
ISO/TS 22003 : 2007 FSMS 23122008 CB 01  
MS ISO/IEC 17021 : 2006 FMC 10122009 CB 02  
MS ISO/IEC 27006 : 2007 ISMS 17022011 CB 01



MS ISO/IEC 17020  
MIBAS NO. 003



**MS ISO/IEC 17025  
TESTING**

SAMM NO 085	SAMM NO 299
SAMM NO 086	SAMM NO 359
SAMM NO 087	SAMM NO 240
SAMM NO 219	SAMM NO 377
SAMM NO 231	

# SIRIM QAS International

## Certification Marks



# IECEE CB SCHEME

## IECEE CB Scheme

Accepted as an Issuing and Recognizing National Certification Body (NCB) and Certification Body Testing Laboratory (CBTL) in the IECEE CB Scheme.

Test reports and Test certificate issued by SIRIM QAS International are recognized and accepted by member countries of the IECEE CB Scheme

# IECEX Conformity Assessment Schemes

**IECEX 02 - IECEx Certified Equipment Scheme**

**IECEX 03 - IECEx Certified Service Facilities Scheme**

**IECEX 04 - IECEx Conformity Mark Licensing System**

**IECEX 05 - IECEx Certification of Personnel  
Competencies(CoPC) Scheme**



# IECEX Conformity Assessment Schemes

## SIRIM QAS International

Accepted as Certification Body for IECEX 03 -  
IECEX Certified Service Facilities Scheme in  
March 2011

Accepted as Certification Body for IECEX 05 -  
IECEX Certification of Personnel Competencies  
(CoPC) Scheme in June 2013

# Accepted IECEx Certification Body – Service Facilities

International Electrotechnical  
Commission



International Electrotechnical Commission  
System for Certification to Standards relating to  
equipment for use in Explosive Atmospheres

## CERTIFICATE OF ACCEPTANCE

IECEX Certification Body

This is to certify that

**SIRIM QAS International Sdn Bhd**

*is an Accepted IECEx Certification Body (ExCB) within the IECEx Certified Service Facilities Program  
in accordance with the Scheme Rules IECEx 03 - IECEx Certified Service Facilities Program covering  
repair and overhaul of Ex equipment – Rules of Procedure*



The scope and currency of this  
Certificate may be confirmed by visiting the IECEx Web Site



Chris Agius  
IECEX Secretary  
March 2011

# Accepted IECEx Certification Body – CoPC

International Electrotechnical  
Commission



International Electrotechnical Commission  
System for Certification to Standards relating to  
equipment for use in Explosive Atmospheres

## CERTIFICATE OF ACCEPTANCE

IECEX Certification Body

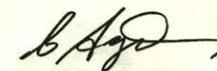
This is to certify that

**SIRIM QAS International Sdn Bhd**

is an Accepted IECEx Certification Body (ExCB) within the *IECEX Scheme for Certification of Personnel Competencies (CoPC) for Explosive Atmospheres* in accordance with the *Scheme Rules of Procedure, IECEx 05*



The scope and currency of this  
Certificate may be confirmed by visiting the IECEx Web Site  
at [www.iecex.com](http://www.iecex.com)



Chris Agius  
IECEX Executive  
Secretary  
June 2013

# IECEX CoPC Scheme

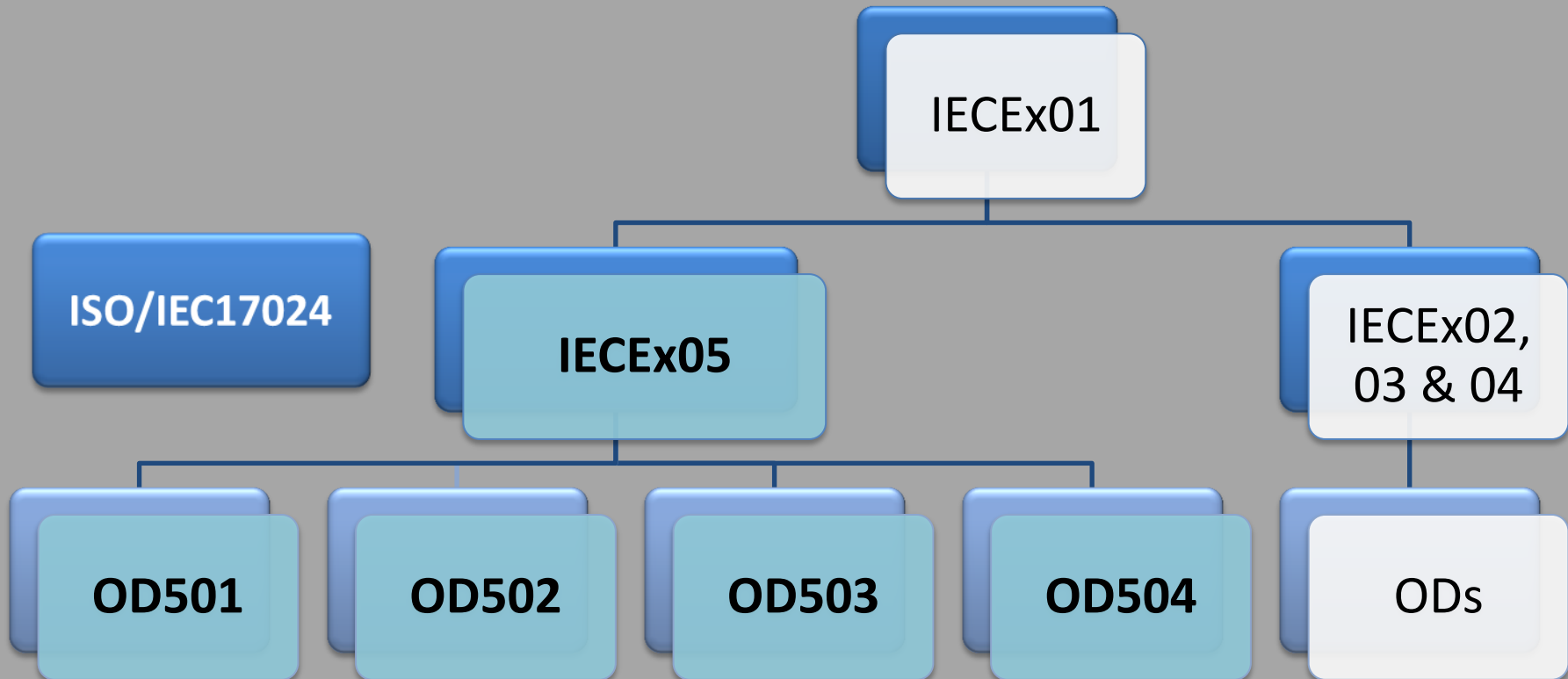
**The IECEX Certification of Personnel Competence Scheme is the international scheme aimed at providing personnel with a worldwide recognized certificate.**

**Covering areas of design, area classification, selection, installation, maintenance, inspection, audit, overhaul and repair of Ex equipment**

**Shows that the certificate holder is competence:**

- **working in the Ex industry safely,**
- **conducting work on Ex equipment,**
- **ensuring Ex equipment is operating safely in accordance with its protection techniques.**

# IECEX CoPC Framework



# List of Units of Competency

Reference	Title	Scope limitation <sup>a)</sup>
Unit Ex 001	– Apply basic principles of protection in explosive atmospheres	Not applicable
Unit Ex 002	– Perform classification of hazardous areas	3
Unit Ex 003	– Install explosion-protected equipment and wiring systems	1, 2, 3, 4
Unit Ex 004	– Maintain equipment in explosive atmospheres	1, 2, 4
Unit Ex 005	– Overhaul and repair of explosion-protected equipment	1, 2, 4
Unit Ex 006	– Test electrical installations in or associated with explosive atmospheres	3, 4
Unit Ex 007	– Perform visual & close inspection of electrical installations in or associated with explosive atmospheres	3, 4
Unit Ex 008	– Perform detailed inspection of electrical installations in or associated with explosive atmospheres	3, 4
Unit Ex 009	– Design electrical installations in or associated with explosive atmospheres	3, 4
Unit Ex 010	– Perform audit inspection of electrical installations in or associated with explosive atmospheres	3, 4

a) Limitation: 1. Explosion – protection technique  
4. Voltage

2. Product Type

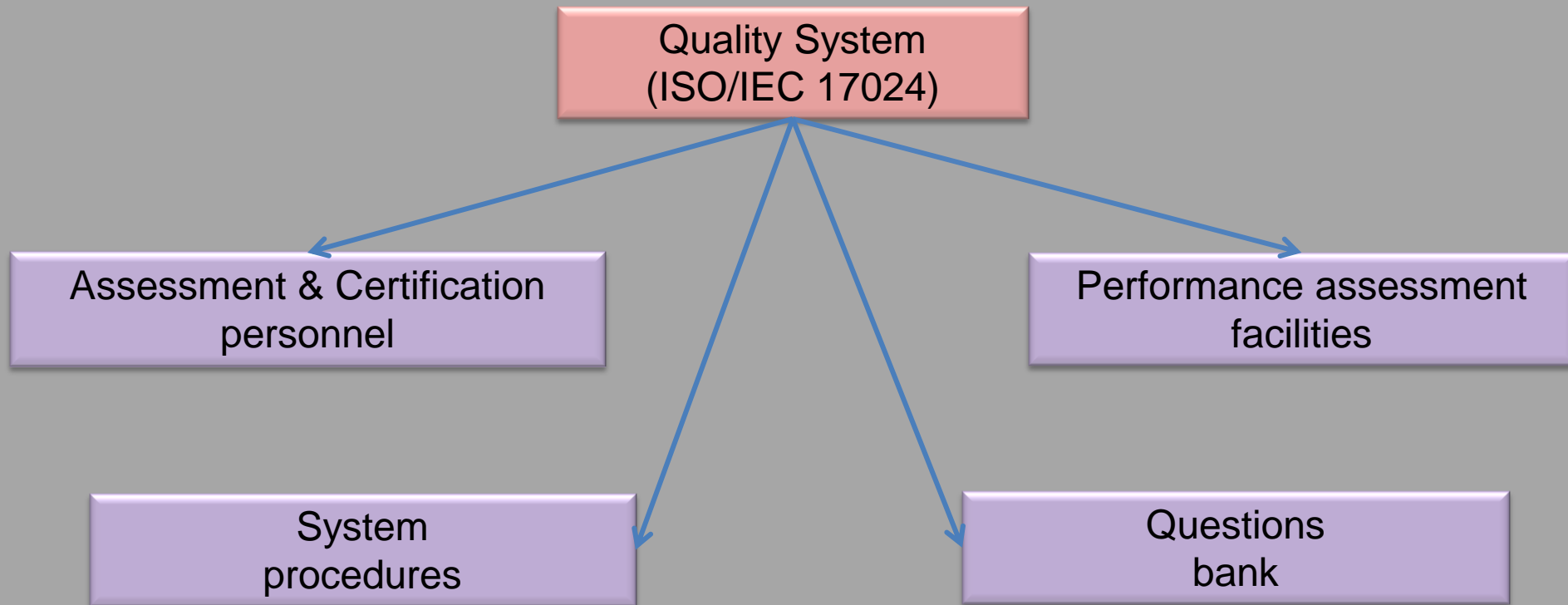
3. Group

# Development of IECEx 05 Certification of Personnel Competence for Explosive Atmospheres



# Scheme Development

## Major components of the ExCB quality system

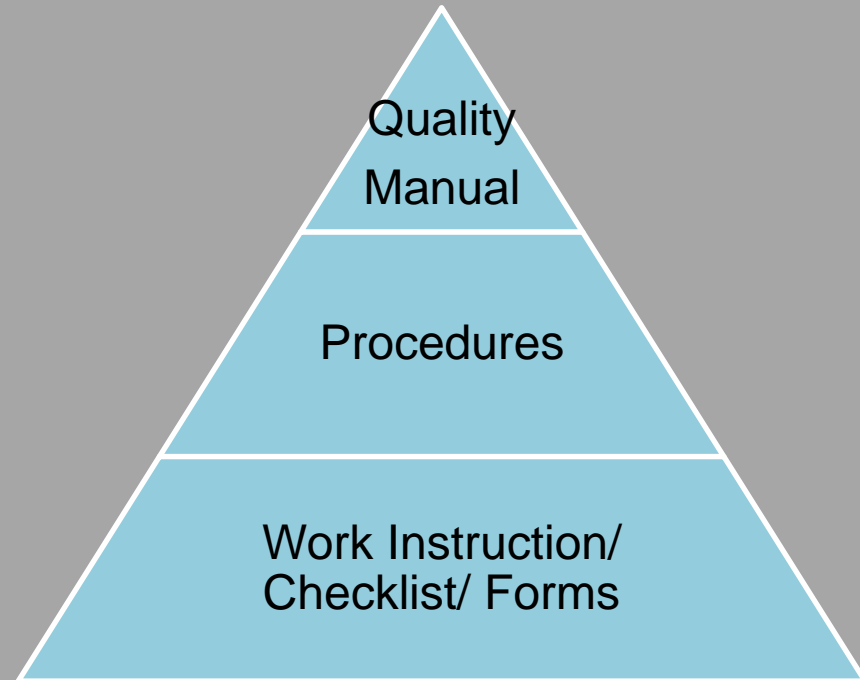
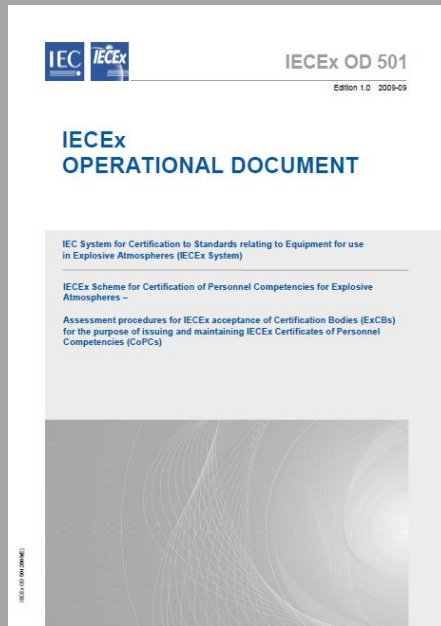




# Scheme Development

Quality System  
(ISO/IEC 17024)

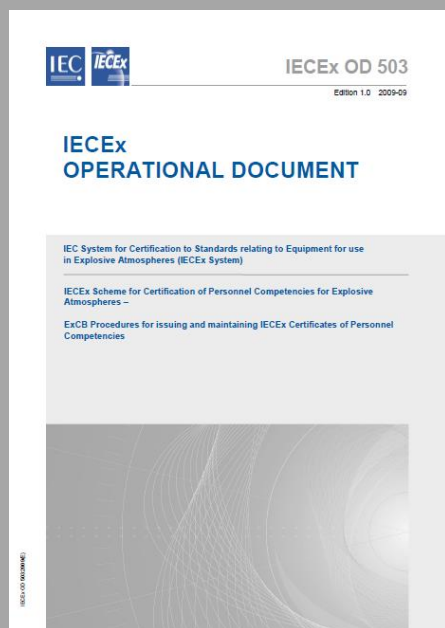
System  
procedures



# Scheme Development

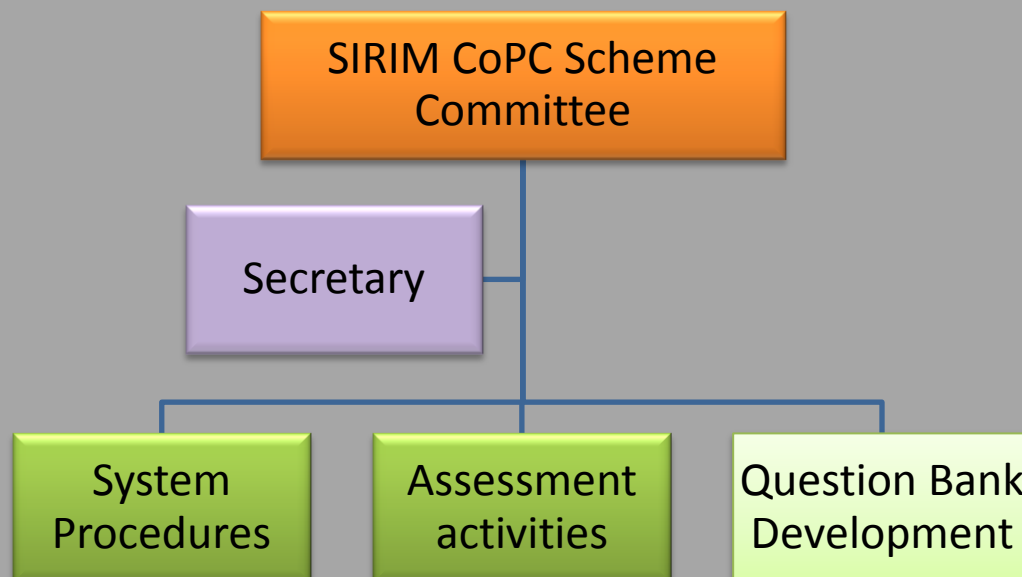
Quality System  
(ISO/IEC 17024)

Assessment &  
Certification  
personnel



## IECEX OD 503 - 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.



# Scheme Development

Quality System  
(ISO/IEC 17024)

Question  
bank



Questions  
selection for  
assessment

SIRIM CoPC  
Technical  
Committee

Questions  
development  
& periodical  
review

Mapping  
process

Questions  
validation

# Scheme Development

Quality System  
(ISO/IEC 17024)

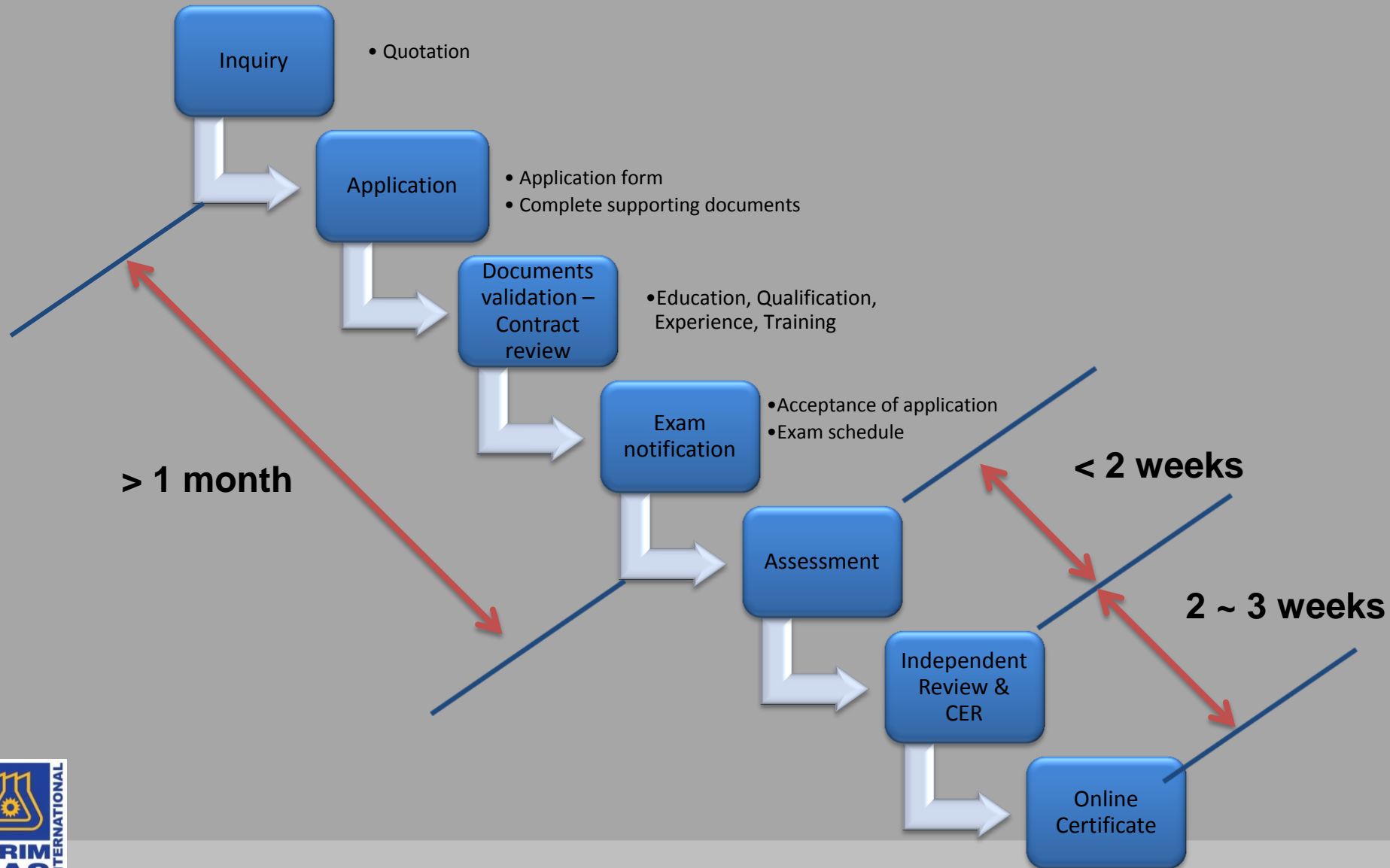
Performance  
assessment facilities

Performance assessment bays for the  
Unit Ex 003, Ex 007, Ex 008

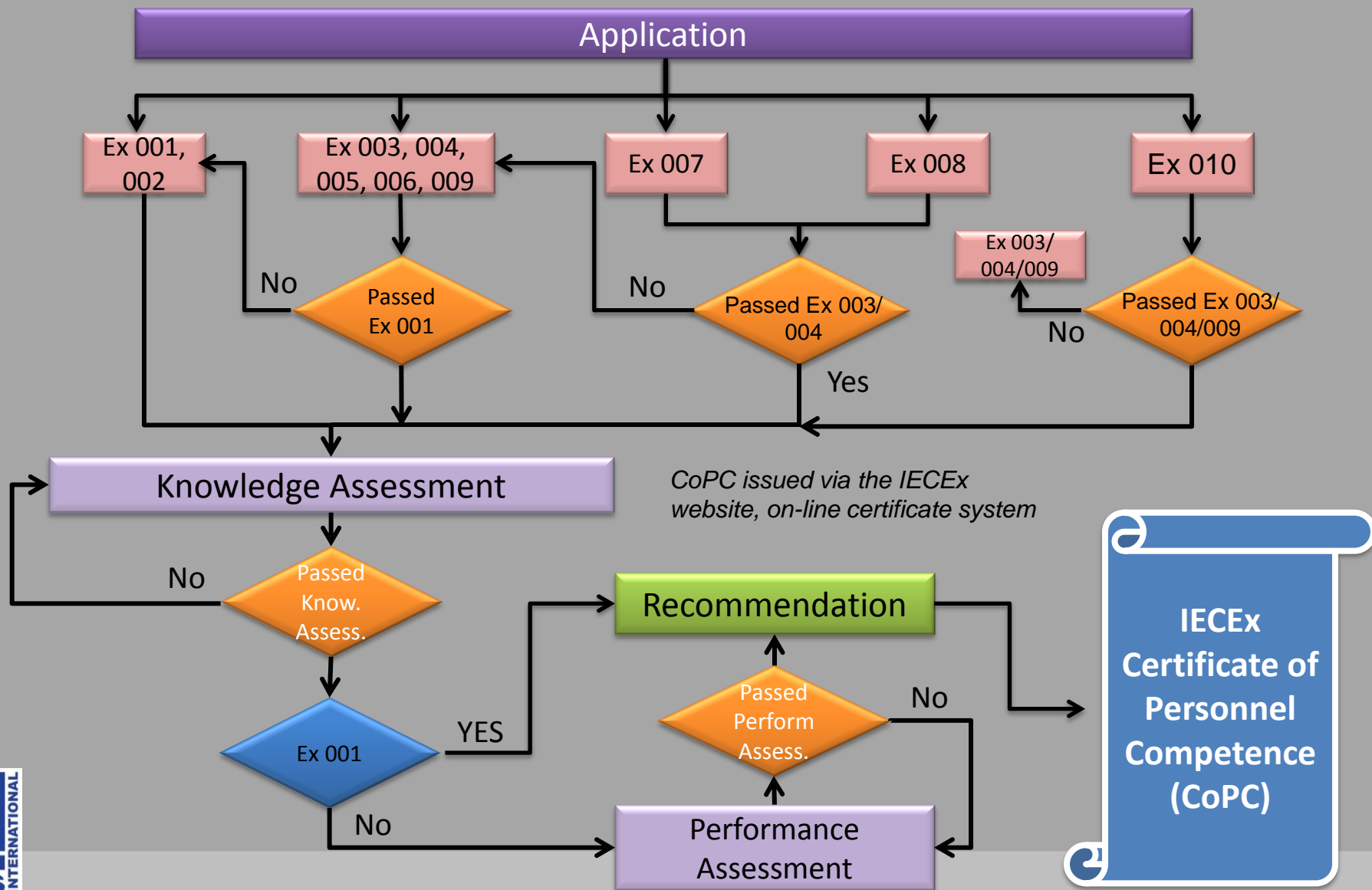


# **Implementation of IECEx 05 Certification of Personnel Competence for Explosive Atmospheres**

# CoPC – Certification Process



# CoPC – Certification Process





# Evidence of qualification/experience

## **General qualifications not specific to explosive atmospheres**

- Technical education - Engineering Diplomas, Degree Certificates, College Certificates etc
- Formal internal training programme set by and endorsed/countersigned by an employer.

## **Qualifications specific to explosive atmospheres**

- Formal external training undertaken on subjects and topics relevant to explosive atmospheres
- Formal internal training programme set by and endorsed/countersigned by an employer

## **Work experience both hazardous and non-hazardous area**

A resume prepared in a chronological order with latest experience first which should include

- Employer and type of industry
- Position and responsibility
- Protection techniques used
- Standards and codes of practice used
- Working safely in hazardous areas
- Duties undertaken



# Contract Review

Ensure that the application is within the scope of acceptance of SIRIM QAS International and evaluate against the scheme requirements

- Confirm receipt of the applicants experience log
- Confirm receipt evidence of applicants training records and qualifications/educations
- Determine whether a surcharge applies for applicant from non IECEX member countries (OD019)
- Estimate of time and costs
- Any special requirements and arrangement, e.g. travel, accommodation, translation of documentation etc.
- Agreement on method and system of payment

# Notification

Official notification whether the applicant is eligible to sit for the assessment

- Date and Time
- Venue

Applicant will be provided with an assessment detail which contains

- Assessment information
- Assessment room/facilities
- Personal belongs
- Defective questions
- Candidate conduct

# Assessment

## Unit Ex 001 Exam Cover page

CONFIDENTIAL

Unit Ex 001 : SET D (Rev. 0)



IECEX Scheme for Certification of Personnel  
Competence (CoPC) for Explosive Atmospheres

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## UNIT Ex001

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DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO

1. This question booklet consists of **THREE** sections : **Section A**, **Section B** and **Section C**
2. Answer **ALL** questions
3. Give only **ONE** answer / solution to each question
4. For **Section A** and **Section B**, you must use the answer sheet provided.
5. For **Section C**, your answer must be written in the answer booklet provided. If the spaces in the booklet are insufficient, please request the additional answer sheets from the invigilator.
6. The diagram (if any) in the questions provided are not drawn to scale unless stated
7. You may use a non-programmable calculator
8. Please hand over this questions booklet and answer sheet to the invigilator upon completing the examination session.

Duration: 100 minutes

# Assessment



IECEx Scheme for Certification of  
Personnel Competence (CoPC) for  
Explosive Atmospheres

## ANSWER WORK SHEET

NAME : \_\_\_\_\_  
IDENTIFICATION NO : \_\_\_\_\_  
ASSESSMENT DATE : \_\_\_\_\_  
ASSESSMENT LOCATION : \_\_\_\_\_  
QUESTION PAPER SET : \_\_\_\_\_

NOTE : CIRCLE only ONE answer which is **THE MOST APPROPRIATE**.

1. A B C D	26. A B C D	51. A B C D	76. A B C D
2. A B C D	27. A B C D	52. A B C D	77. A B C D
3. A B C D	28. A B C D	53. A B C D	78. A B C D
4. A B C D	29. A B C D	54. A B C D	79. A B C D
5. A B C D	30. A B C D	55. A B C D	80. A B C D
6. A B C D	31. A B C D	56. A B C D	81. A B C D
7. A B C D	32. A B C D	57. A B C D	82. A B C D
8. A B C D	33. A B C D	58. A B C D	83. A B C D
9. A B C D	34. A B C D	59. A B C D	84. A B C D
10. A B C D	35. A B C D	60. A B C D	85. A B C D
11. A B C D	36. A B C D	61. A B C D	86. A B C D
12. A B C D	37. A B C D	62. A B C D	87. A B C D
13. A B C D	38. A B C D	63. A B C D	88. A B C D
14. A B C D	39. A B C D	64. A B C D	89. A B C D
15. A B C D	40. A B C D	65. A B C D	90. A B C D
16. A B C D	41. A B C D	66. A B C D	91. A B C D
17. A B C D	42. A B C D	67. A B C D	92. A B C D
18. A B C D	43. A B C D	68. A B C D	93. A B C D
19. A B C D	44. A B C D	69. A B C D	94. A B C D
20. A B C D	45. A B C D	70. A B C D	95. A B C D
21. A B C D	46. A B C D	71. A B C D	96. A B C D
22. A B C D	47. A B C D	72. A B C D	97. A B C D
23. A B C D	48. A B C D	73. A B C D	98. A B C D
24. A B C D	49. A B C D	74. A B C D	99. A B C D
25. A B C D	50. A B C D	75. A B C D	100. A B C D



IECEx Scheme for Certification of Personnel Competence (CoPC) for  
Explosive Atmospheres

## UNIT Ex 001

### ANSWER WORKSHEET – SECTION C

NAME : \_\_\_\_\_  
IDENTIFICATION NO : \_\_\_\_\_  
ASSESSMENT DATE : \_\_\_\_\_  
ASSESSMENT LOCATION : \_\_\_\_\_

1.	
2.	

## Assessment Results

- Knowledge assessment:
  - o Section A contains no less than the number of selected response questions. All questions shall be answered correctly
  - o Section B contains no less than the number of selected response questions and at least 80 % of these questions shall be answered correctly
  - o Section C contains no less than the number of constructed response questions including calculation questions where relevant and at least 80 % of these questions shall be answered correctly
- Practical examination: All items shall be correctly demonstrated (for unit competency requires performance assessment)


# Personnel Competence Assessment Report (PCAR)

PCAR records the independent assessment and verification of an Ex Competent Person's competence against the IECEx Certification of Personnel Competence Scheme requirements for :

- used in the preparation of the IECEx CoPC
- on-going surveillance of the Ex Competent Person.

SIRIM QAS International issues the IECEx CoPC via the IECEx internet "On-Line Certificate" system, including the registering of the PCAR

# IECEX Certificate of Personnel Competence



## IECEX Certificate Personnel Competence


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**INTERNATIONAL ELECTROTECHNICAL COMMISSION**  
**IEC Certification System for Explosive Atmospheres**  
for rules and details of the IECEX Certification of Personnel Competence (CoPC) Scheme visit [www.iecex.com](http://www.iecex.com)

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Certificate No.:	IECEX CP SRM13.0006	Issue No.: 0
Status:	<b>Current</b>	Date of Original Issue: <b>2013-12-30</b> Date of Expiry: <b>2016-12-30</b>
Applicant:	<b>YAP KENG HOONG</b>	

Scope of Competence: **Ex 001 - Basic principles -**  
(Units according to IEC 60079 series  
to IECEX OD 504) Based on various parts of IEC 60079 series



For Detailed information on Scope Application in accordance with IECEX OD 502 click on PCAR Number below:

PCAR Reference No.: MYSRM/PCAR13.0007/00

*This certificate is issued as verification that the Applicant was assessed and found to comply with the IECEX CoPC Scheme requirements, relating to the scope of Competence and referenced Standards listed above. This certificate is granted subject to the conditions as set out in IECEX CoPC Scheme Rules, IECEX 05 as amended.*

Approved for issue on behalf of the IECEX Certification Body: **Muhammad Nazif Zakaria**  
Position: **Deputy Certification Manager**


Signature: \_\_\_\_\_  
Date: \_\_\_\_\_

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

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Certificate issued by:

**SIRIM QAS International Sdn. Bhd.**  
Building 8, SIRIM Complex  
No. 1, Persiaran Dato' Menteri  
Section 2, P. O. Box 7035  
40700 Shah Alam  
Selangor Darul Ehsan  
Malaysia





# IECEX Wallet ID



For full details of

- Certificate (IECEX CP SRM13.0006)
- PCAR (MY/SRM/PCAR13.0007/00)
- Units of Competence
- Any Limitations

Visit [www.iecex.com](http://www.iecex.com)

**Issuing ExCB details:**

Mr Chen Seng Hock  
Building 8, SIRIM Complex  
No. 1, Persiaran Dato' Menteri  
Section 2, P. O. Box 7035  
40700 Shah Alam  
Selangor Darul Ehsan  
E-mail: [shchen@sirim.my](mailto:shchen@sirim.my)

If lost please notify:  
IECEX secretariat  
286 Sussex Street  
Sydney NSW, Australia  
Ph +61 2 8206 6940  
[Chris.agius@iecex.com](mailto:Chris.agius@iecex.com)



# Acceptance of IECEx Wallet ID

A. ACKNOWLEDGE RECEIPT OF WALLET ID	
Name : _____	I/C No./Passport No. : _____
Wallet ID No. : _____	
Signature : _____	
Date : _____	
B. AGREEMENT PROVISIONS	
<p>I hereby agree to abide by the following terms and conditions :-</p> <ol style="list-style-type: none"> <li>1. To comply with the requirements of <u>IECEX CoPC Scheme</u> including the surveillance and re-certification requirements.</li> <li>2. To only make claims regarding certification those are within the scope for which certification has been granted.</li> <li>3. Not to use the certification in such a manner as to bring the certification body into disrepute, and not to make any statement regarding the certification which the certification body may consider misleading or unauthorized.</li> <li>4. To discontinue the use of all claims to certification that contains any reference to the certification body or certification, upon suspension or withdrawal of certification, and return any certificates issued by the certification body.</li> <li>5. Not to use the certificate in a misleading manner.</li> <li>6. Misuse of <u>IECEX Certificates</u> and <u>IECEX Marks or Logos</u> in publications, catalogues etc., shall be subjected to corrective actions, such as suspension or withdrawal of certificates. Details of the misuse will be published and, if necessary, legal action will be taken. The marks or logo applied shall be for personnel (Applicant) only.</li> <li>7. Not permitted to use <u>SIRIM Marks or Logos</u> in publications, catalogues etc.</li> <li>8. To pay all the related fees charged by SIRIM QAS International prior to the issuance of Wallet ID.</li> <li>9. To inform SIRIM QAS International immediately should the Certified Person is aware of any imitation of the Wallet ID.</li> </ol>	
Certified Person : _____	Signature : _____
Designation : _____	Date : _____

## Changes of IECEX CoPC

Ex Competent Person can request for changes that may alter the scope of the Competence listed on the Certificate – should apply to the ExCB which granted the IECEX CoPC.

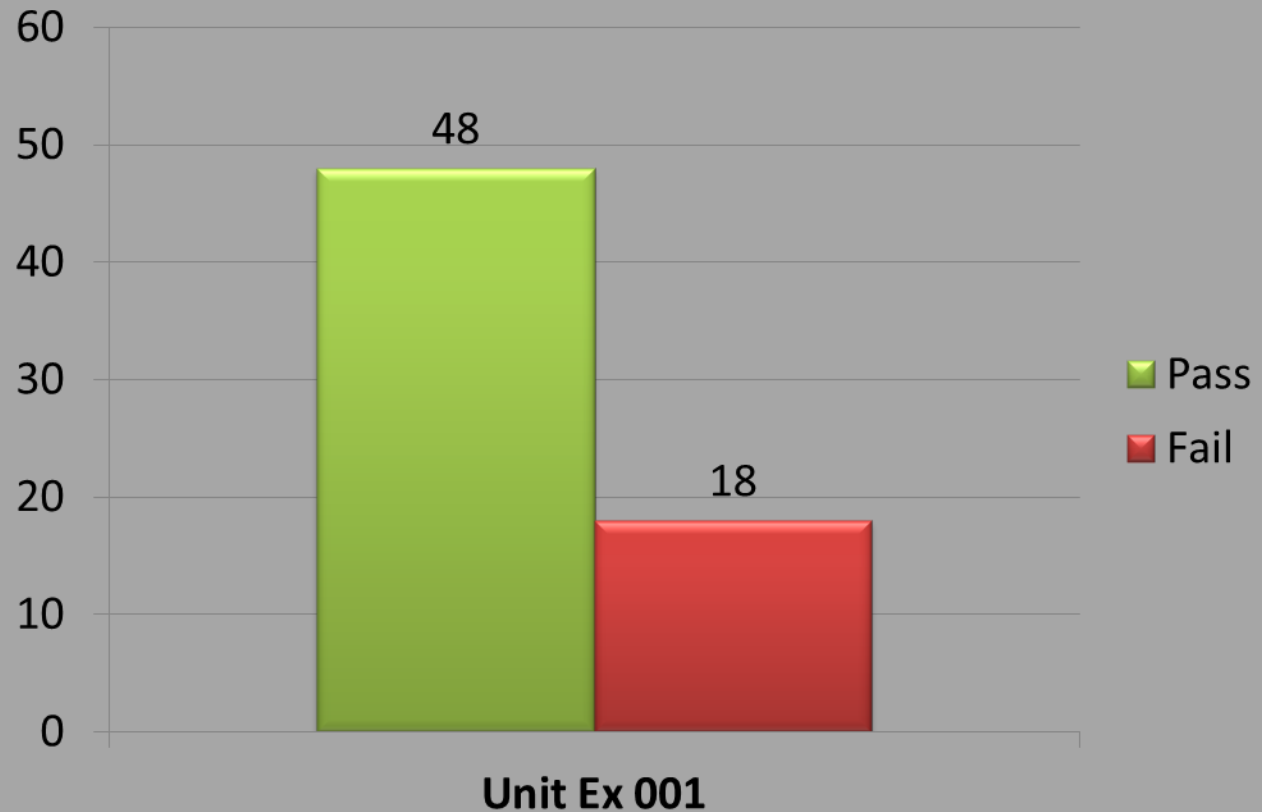
Ex Competent Person shall describe the changes and the measures adopted to ensure continuing conformity with IECEX requirements.

ExCB shall arrange for such assesement as is necessary to be carried out to verify that the Ex Competent Person incorporating the change will still conform to the Scheme requirements.

ExCB shall issue a new Certificate authorizing the change.

Major change(s) typically requires the re-issue of a Certificate.

## Current Statistic



# Surveillance and Re-certification

Surveillance - Skills of certified personnel shall be assessed their area of competence every 18 months. Ex certified personnel shall provide evidence of works such as work log

Re-certification - After three (3) years from the original issue of the PCAR a reassessment of the competence included in the PCAR and Certificate shall be undertaken

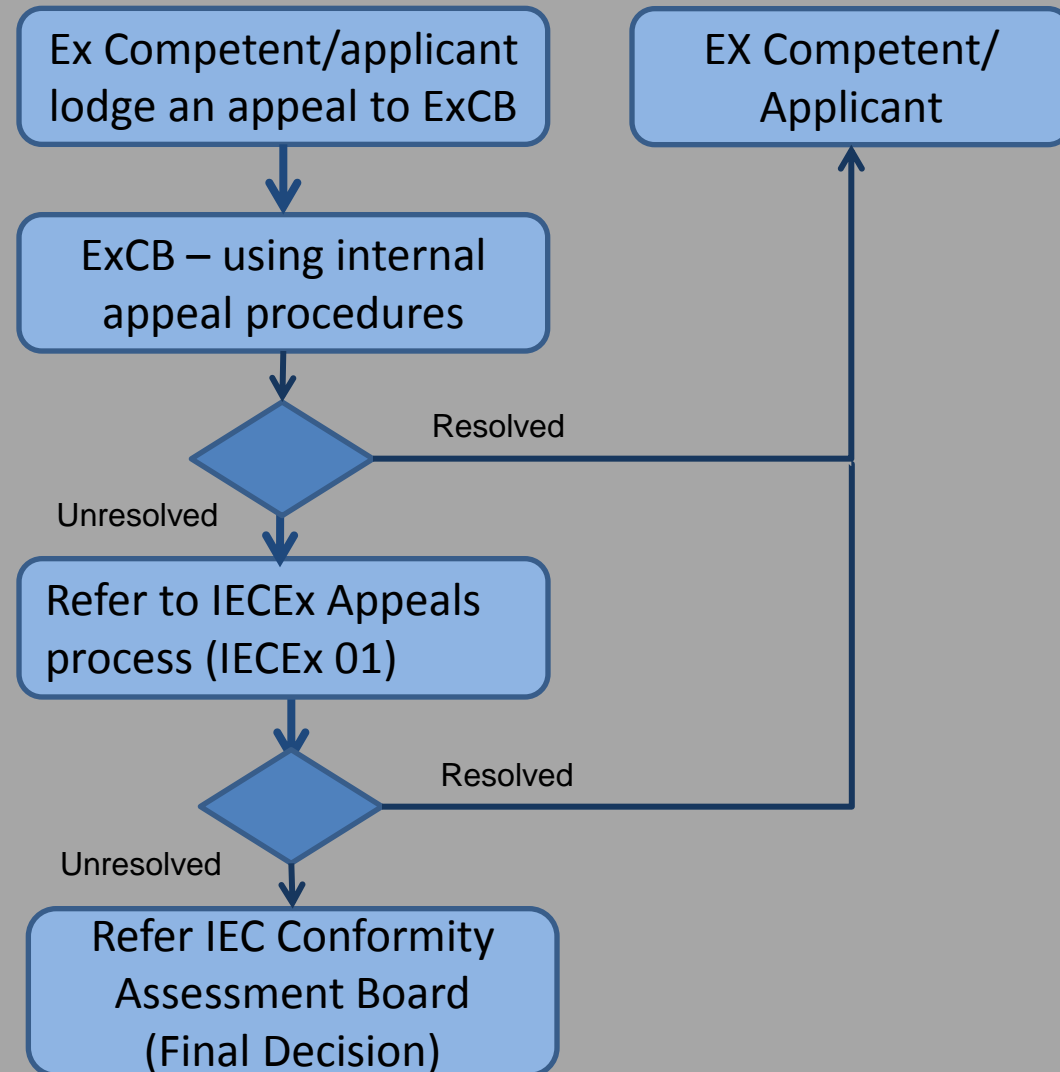
# Suspension or withdrawal

An IECEX CoPC may be suspended or withdrawn due to the following:

- non payment of outstanding fees
- failure to comply with the surveillance requirements
- the Certificate or PCAR has been issued in error
- the holder requests cancellation
- it is used in a misleading way, or
- the Ex Competent Person no longer complies with the IECEX requirements

# Appeals

- Refusal for issuance of IECEX PCAR or IECEX CoPC
- Suspension IECEX CoPC
- Withdrawal IECEX CoPC



# Typical examples of Units of Competence to be gained

Position/job/function	Suggested Unit of Competence
Plant Manager	Unit Ex 001 Apply basic principles of protection in explosive atmospheres
Safety Manager	Unit Ex 001 Apply basic principles of protection in explosive atmospheres Unit Ex 002 Perform classification of hazardous areas
Site Supervisor (Elec. or Inst.)	Unit Ex 001 Apply basic principles of protection in explosive atmospheres Unit Ex 003 Install explosion-protected equipment and wiring systems Unit Ex 004 Maintain equipment in explosive atmospheres Unit Ex 008 Perform detailed inspection of electrical installations in or associated with explosive atmospheres
Technician (Elec. or Inst.)	Unit Ex 001 Apply basic principles of protection in explosive atmospheres Unit Ex 003 Install explosion-protected equipment and wiring systems Unit Ex 004 Maintain equipment in explosive atmospheres Unit Ex 007 Perform visual and close inspection of electrical installations in or associated with explosive atmospheres

# Why CoPC

Among others, this scheme :-

- provides plant owners/companies with independent proof that a person holding an IECEx Certificate of Personnel Competence has the knowledge and skills necessary to implement the International Standards;
- enhances confidence to the certificate holders as they have been deemed competent to an international standard, and have been certified as having the required skills and knowledge to perform their task
- facilitates plant owners/companies to promote safety awareness among employees, suppliers and contractors
- maintains the integrity of safety features of equipment and installation, hence safety of human are ensured, plant damages can be avoided and preservation of environment



## Way Forwards

- ✓ SIRIM QAS International – to be the first ASEAN-based Certification Body accepted to IECEX05 (full scopes).
- ✓ Extension of scopes is in progress – Unit Ex 007 and Ex 008.
- ✓ Acceptance for all scopes of CoPC Units of Competence (End of 2015)
- ✓ Acceptance for other IECEX Certification Schemes
- ✓ Promote IECEX schemes to the industries in ASEAN region

# Thank you

**BASORI HJ SELAMAT**  
Product Certification and  
Inspection Department  
**SIRIM QAS International**