A Global Approach for the Ex Field - IECEx

Industry Conference - Baseefa Buxton 5 October 2005

Chris Agius
Secretary IECEx

Introduction to IECEx

- What is Ex ??
- Why have IECEx ??
- Management of IECEx
- IECEx Financing
- Immediate Challenges
- What is the future??

Ex Equipment – Where ???

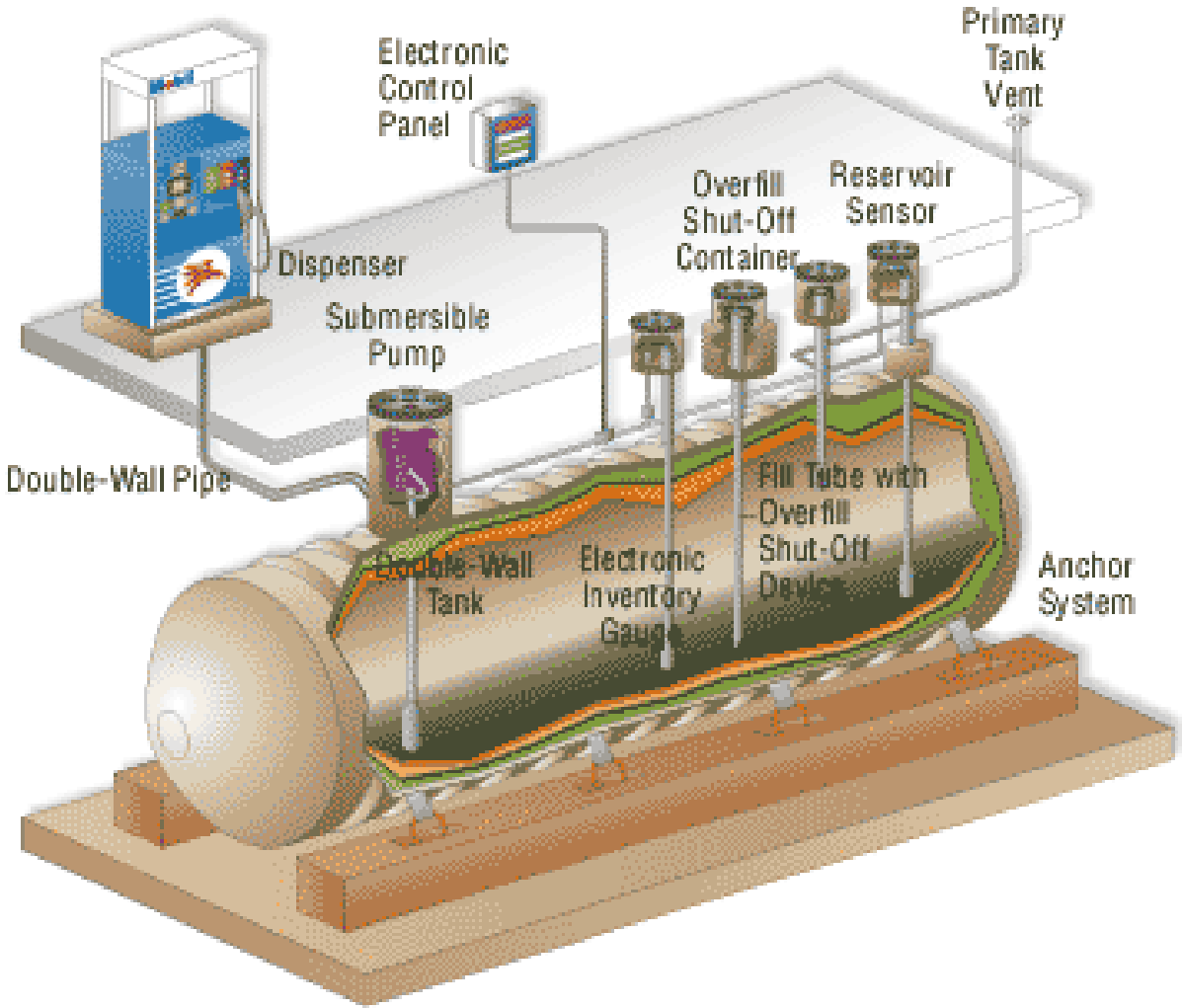
- Ex equipment is frequently found in these locations:

  - Automotive refuelling stations or petrol stations
  - Oil refineries, rigs and processing plants
  - Chemical processing plants
  - Printing industries, paper and textiles
  - Hospital operating theatres
  - Aircraft refuelling and hangars
  - Surface coating industries
  - Oil and gas tankers, drilling ship and FPSO (Floating Production Storage and Off-Loading Vessels)
  - Underground coal mines
  - Sewerage treatment plants
  - Gas pipelines and distribution centres
  - Grain handling and storage
  - Woodworking areas
  - Sugar refineries
  - Metal surface grinding, especially aluminium dusts and particles.

Ex Equipment – Where ???

Fundamental Disciplines of Ex

- Area Classification
- Equipment Conformance
- Installation Conformance
- Maintenance, Repair + Overhaul


Electronic
Control
Panel
Primary
Tank
Vent
Overfill
Shut-Off
Container
Reservoir
Sensor
Dispenser
Submersible
Pump
Double-Wall Pipe
Fill Tube with
Overfill
Shut-Off
Device
Electronic
Inventory
Gauge
Anchor
System

Equipment Conformance – Ex Design

Ex Safety Concept	Symbol	Type of protection – covered by Standards
Exclusion	**DIP**	Dust ignition protection. Also see new IEC 61241 series Ex tD, Ex pD, Ex mD etc
	Ex m	Encapsulation, IEC 60079 -18
	Ex n	Non-sparking (hermetically sealed devices, sealed devices and restricted breathing)
	Ex o	Oil-immersion
	Ex p	Pressurized enclosure
	Ex q	Powder filled (sometimes called 'sand filled')
Explosion containment	**Ex d**	**Flameproof enclosure**
	Ex n	**Non-sparking (enclosed-break devices)**
Energy limitation	**Ex i**	Intrinsic safety, Ex ia + ib
	Ex n	Non-sparking (non-incendive components and energy limitation)
Dilution	**Ex v**	Ventilation
Avoidance of ignition source	**Ex e**	Increased safety
	Ex n	Non-sparking (inherently non-sparking)
*	**Ex s**	Special protection

Concept Standards – Gases/Vapours

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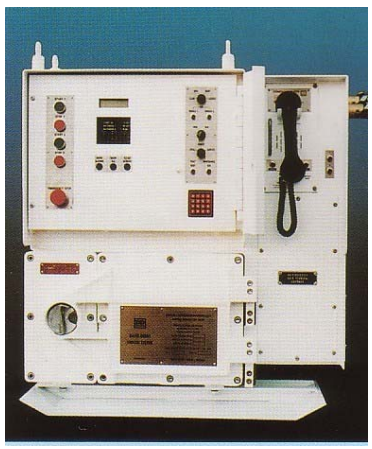


What is IECEx?

The IEC Scheme covering Certification to Standards that relate to Apparatus for Explosive Atmospheres, to provide an Internationally accepted means of *demonstrating claimed compliance with IEC Standards*

International Electrotechnical Commission

Form in 1906, Mission = International Standardisation in the Electrotechnology fields

- **IECEE – CB and FCS Scheme**

  www.cbscheme.org

- **IECQ – Components** **www.iecq.org**

- **IECEx- Explosive Atmospheres** **www.iecex.com**

Online IECEx certificates

- Certificates are created by the ExCB “Live” on the IECEx Website via a secure area
- ExCBs can only issue IECEx Certificates to Standards they have permission for, i.e. within their scope of acceptance
- Complete certificate for public view and download.
- Search capabilities act as a “buyers guide of Ex products”.
- Available anywhere there is access to the Internet.
- www.iecex.com

History of IECEx

- **1992** – Questionnaire to IEC National Committees
- **1996** – First meeting of the IECEx Management Committee (ExCC)
- **1997 – 1999** – First round of Peer assessments, development of operational rules and forms
- **1999** – Commence mutual acceptance of IECEx Test Reports (ExTRs), to fast-track national certification
- **2003** – IECEx internet based “On-Line” Certificates made available
- **2004** – Decision to expand Scope of IECEx operation to include Services

IECEx Scheme - Services

IECEx Scheme
Basic Rules IECEx 01

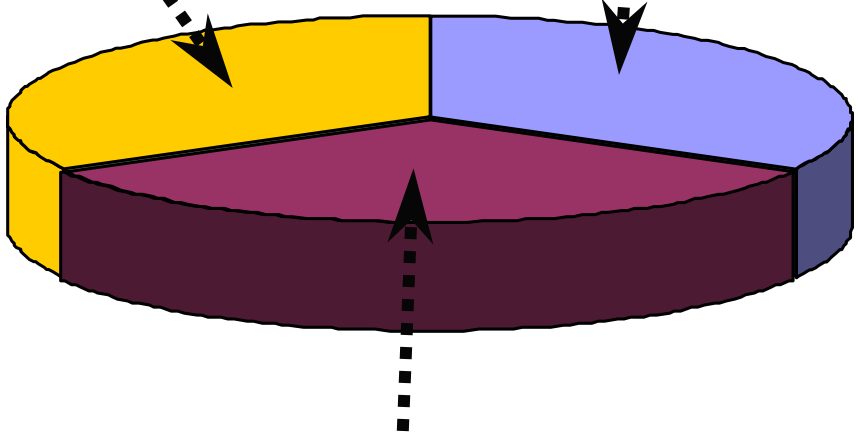
- **IECEx Certified Equipment Rules IECEx 02**
- **IECEx Certified Service Facilities Rules IECEx 03 (in draft)**
- **Other Future Service Offerings**

IECEx Certified Equipment Rules IECEx 02

Core Elements of IECEx Equipment Certification

Testing of Samples (Type Test)

Initial Assessment of Manufacturer's Quality System (factory audit)



On-going Surveillance (factory audits)

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IECEx Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION
IEC Certification Scheme for Explosive Atmospheres
for rules and details of the IECEx Scheme visit www.iecex.com

Certificate No.: IECEx TSA 03.0000X Issue No.: 0

Status: Draft Current Suspended Cancelled

Date of issue: 2003-07-26 Page 1 of 4

Applicant Name: SAMPLE CERTIFICATE

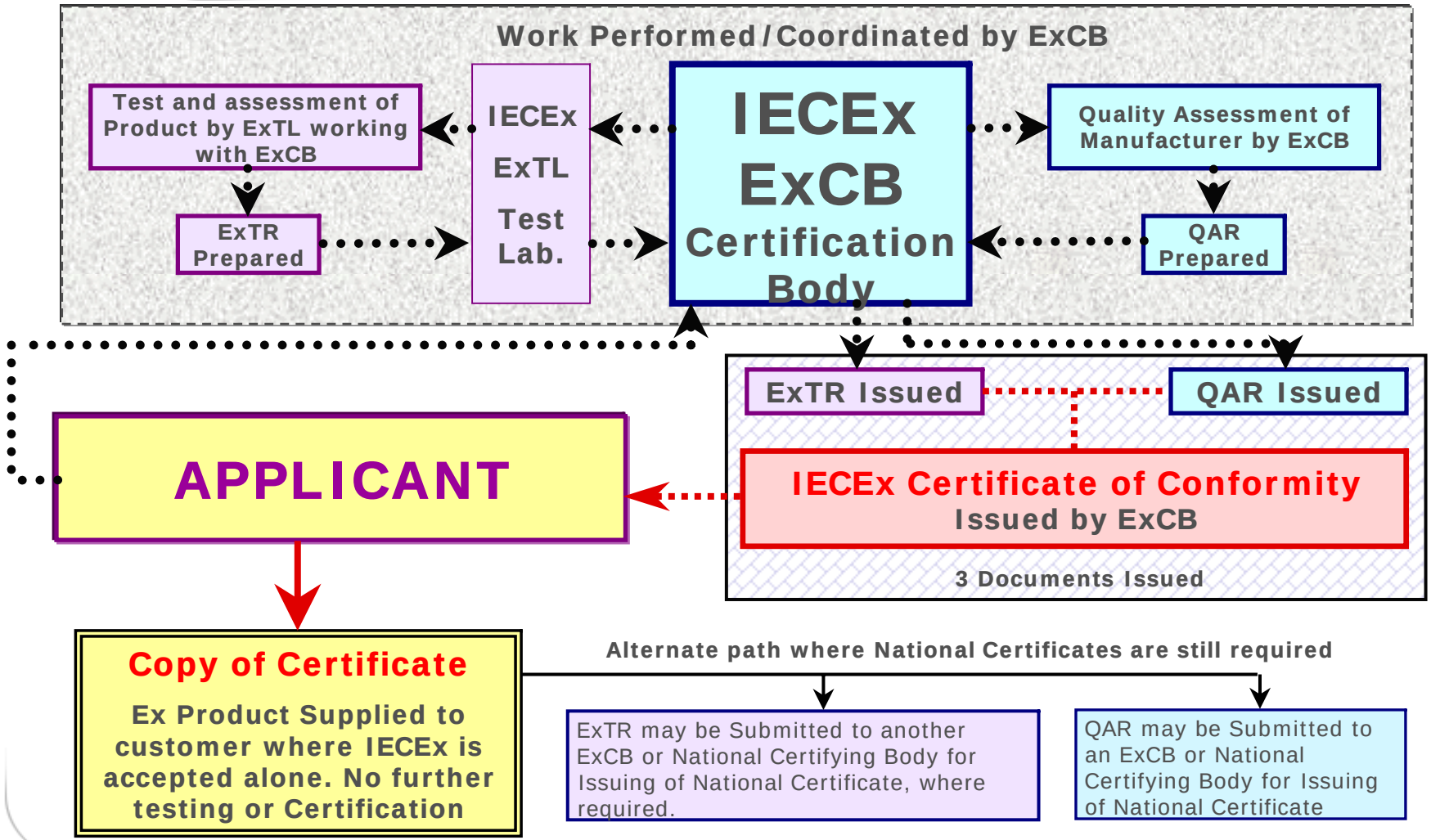
Applicant Address: 132 Sample Street
SAMPLE TOWN NSW 2000

Applicant Country: Australia

Electrical Apparatus: Portable Radios

Optional accessory: Nil

Overview + Flexability of IECEx



IECEx Scheme Documentation Hierarchy

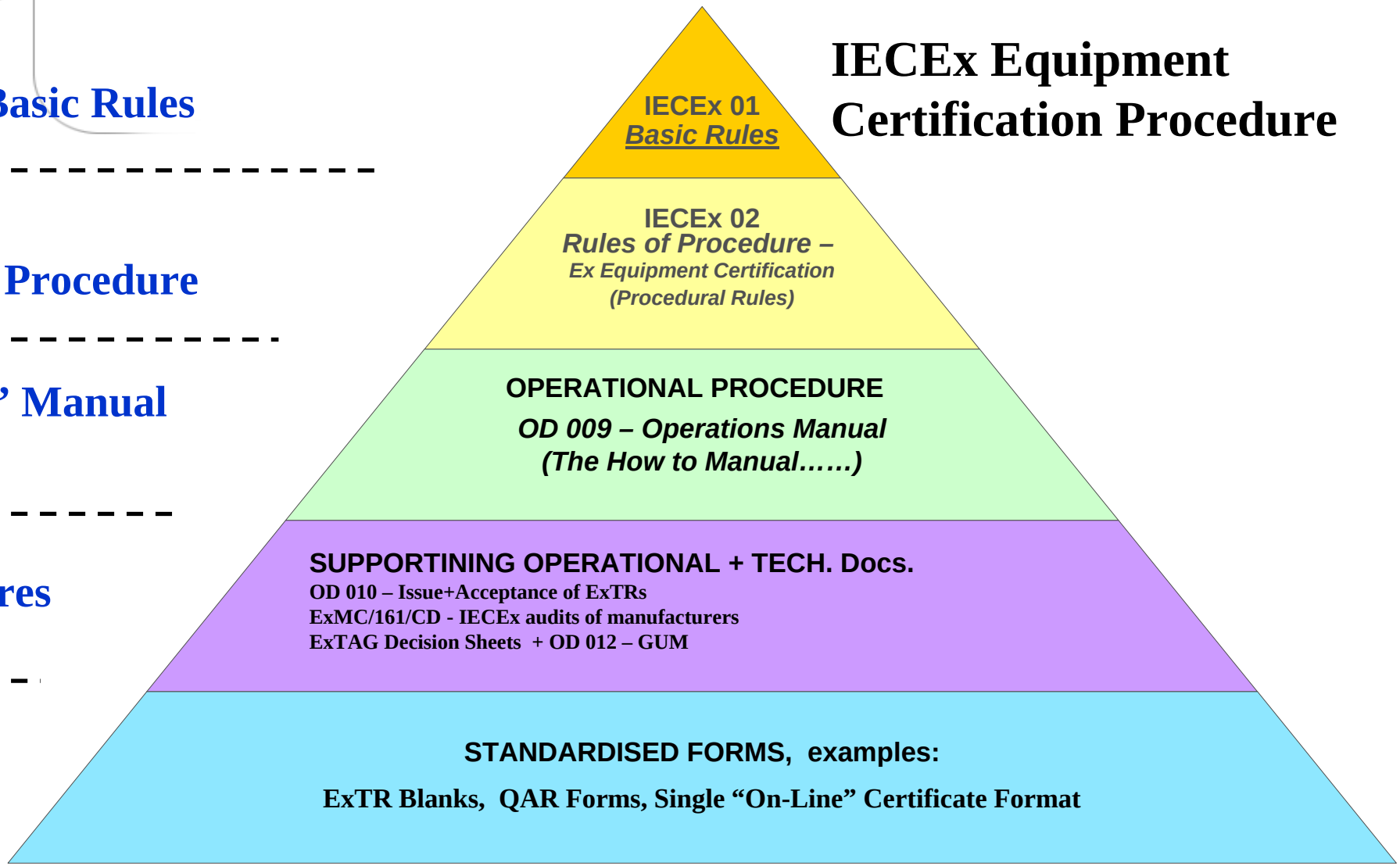
IECEx Basic Rules

Rules of Procedure

"How to" Manual

Procedures

Forms



IECEx Equipment Certification Procedure

IECEx Operational Documents

OD001	**IECEx Membership, ExCBs, ExTLs and Applicant bodies**
OD003	**ExMC/100/CD – IECEx Assessment Procedures for the assessment and surveillance of ExCBs and ExTLs**
OD005	***IECEx Quality System Requirements for Manufacturers***
OD006	**IECEx Site Assessment Report for ass. of ExCBs, ExTLs**
OD007	**IECEx ExCB Assessment Checklist for ISO/IEC Guide 65**
OD008	**Exchange of information between ExNB and IECEx**
OD009	***IECEx Operations Manual***
OD010	**Guidance for the Preparation of IECEx Test Reports (ExTRs) by IECEx Certification Bodies (ExTRs) and the Processing of ExTRs by Receiving ExCBs**

The IECEx Way for Ex Certification

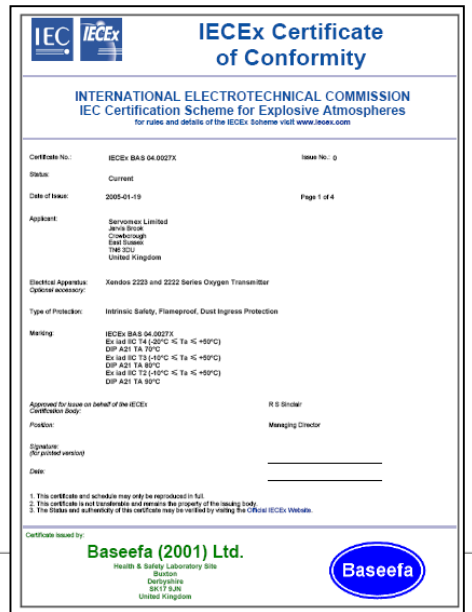
ExCB Country A

ExCB Country B

ExCB Country C

ExCB Country D

Common Rules and Procedures adopted by ALL ExCBs and ExTLs

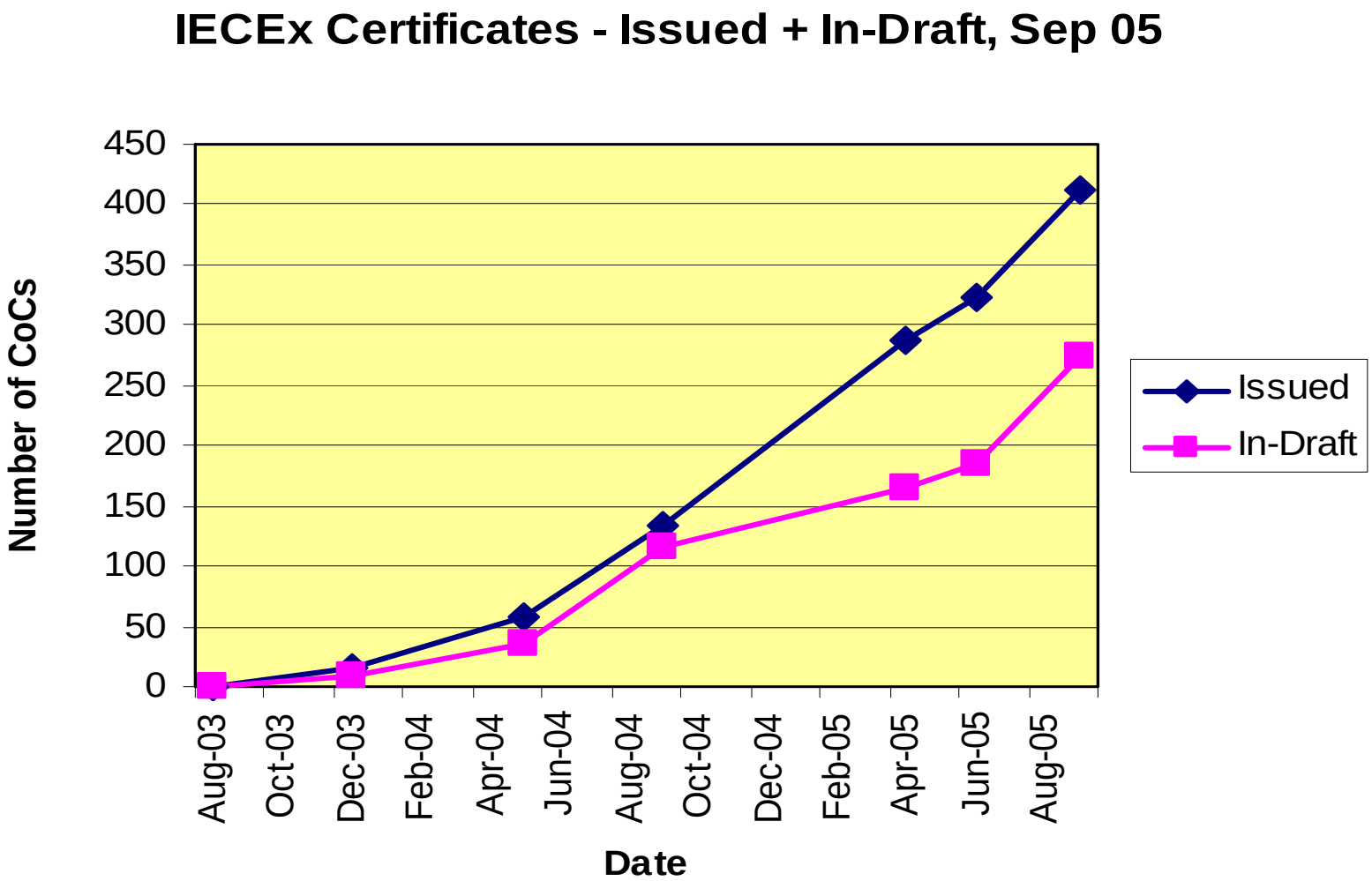


IECEx Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION
IEC Certification Scheme for Explosive Atmospheres
for rules and details of the IECEx Scheme visit www.iecex.com

Certificate No.: IECEx BAS 04.0027X — Issue No.: 0
Status: Current
Date of Issue: 2005-01-19 — Page 1 of 4
Applicant: Servomex Limited, Jarvis Brook, Crowborough, East Sussex, TN6 3DU, United Kingdom
Electrical Apparatus: Xendos 2223 and 2222 Series Oxygen Transmitter
Optional accessory:
Type of Protection: Intrinsic Safety, Flameproof, Dust Ingress Protection
Marking: IECEx BAS 04.0027X
Ex ia IIC T4 (-20°C ≤ Ta ≤ +50°C)
DIP A21 TA 70°C
Ex ia IIC T3 (-10°C ≤ Ta ≤ +50°C)
DIP A21 TA 80°C
Ex ia IIC T2 (-10°C ≤ Ta ≤ +50°C)
DIP A21 TA 90°C
Approved for issue on behalf of the IECEx Certification Body: R S Sinclair
Position: Managing Director
Signature: (for printed version)
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.
Certificate issued by:
Baseefa (2001) Ltd.
Health & Safety Laboratory Site, Buxton, Derbyshire, SK17 9JN, United Kingdom
Baseefa

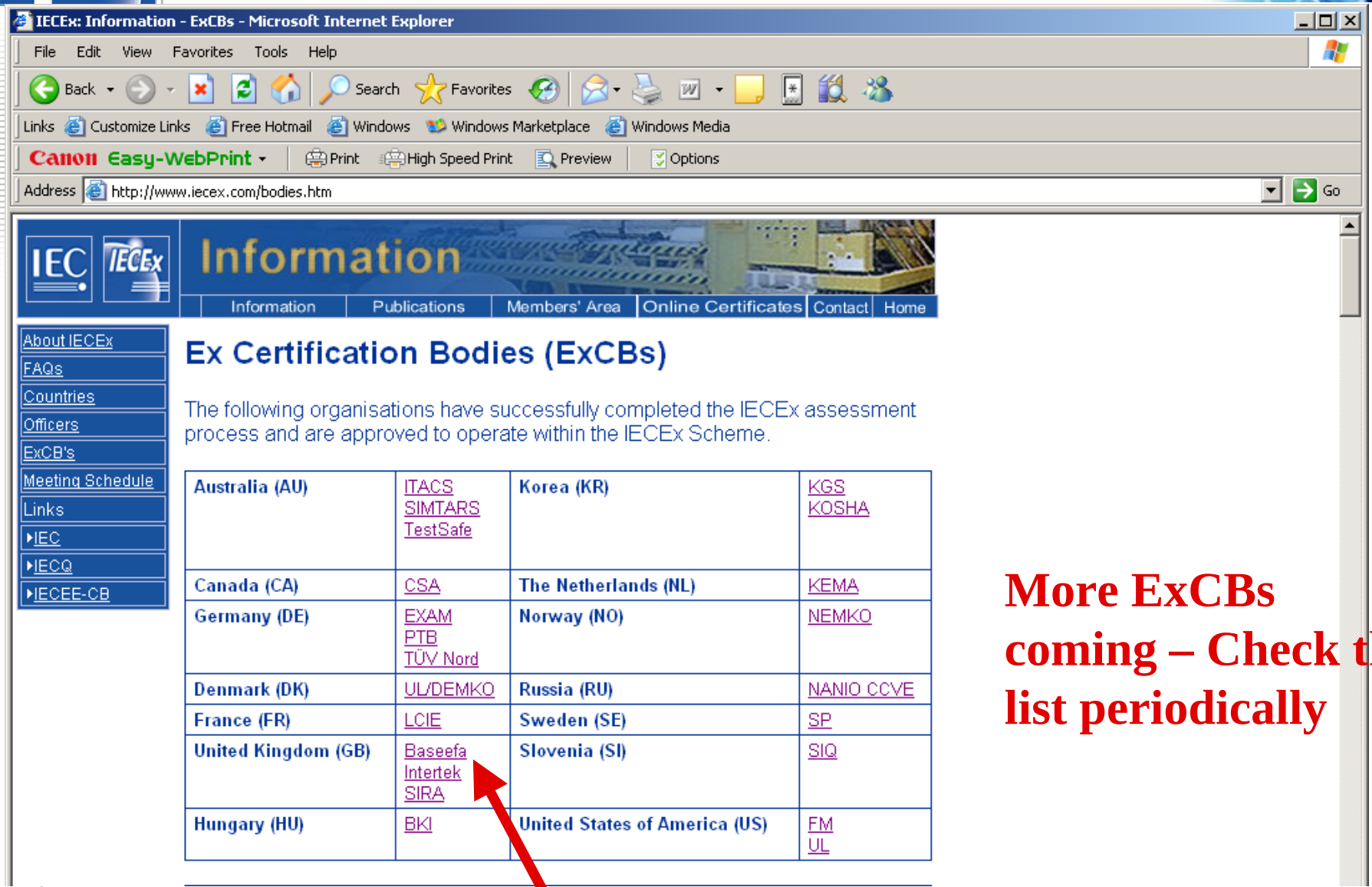
No. of IECEx Equipment Certificates



Tour of the IECEx Website

- List of Approved IECEx Certification Bodies
- Publications
- Members Area: Committee Documents, Directory etc
- On-Line Certificate System
  - View Original Certificates
  - Search capabilities
  - Certificate Status

IECEx Bodies as at 10 March 05



Australia (AU)	ITACS SIMTARS TestSafe	**Korea (KR)**	KGS KOSHA
Canada (CA)	CSA	**The Netherlands (NL)**	KEMA
Germany (DE)	EXAM PTB TÜV Nord	**Norway (NO)**	NEMKO
Denmark (DK)	UL/DEMKO	**Russia (RU)**	NANIO CCVE
France (FR)	LCIE	**Sweden (SE)**	SP
United Kingdom (GB)	Baseefa Intertek SIRA	**Slovenia (SI)**	SIQ
Hungary (HU)	BKI	**United States of America (US)**	FM UL

More ExCBs coming – Check this list periodically

List of ExCBs

Canon Easy-WebPrint | Print | High Speed Print | Preview | Address http://www.iecex.com/bodies.htm#Baseefa | Go

Denmark (DK) UL International DEMKO A/S Underwriters Laboratories Inc.®	Steen Christensen UL International DEMKO A/S UL/DEMKO Lyskaer 8 2730 Herlev DENMARK P O Box 514 DK-2730 Herlev Tel: + 45 44 85 6372 Fax: + 45 44 85 6555 Email: Steen Christensen	General Requirements IEC 60079-0 Flameproof enclosures 'd' IEC 60079-1 Pressurised enclosures 'p' IEC 60079-2 Powder filling 'q' IEC 60079-5 Oil-immersion 'o' IEC 60079-6 Increased Safety 'e' IEC 60079-7 Intrinsic Safety 'i' IEC 60079-11 Type of protection 'n' (Non-Sparking) IEC 60079-15 Encapsulation 'm' IEC 60079-18
France (FR) Laboratoire Central des Industries Electriques LCIE BUREAU VERITAS 1828 L C I E	Mr Michel Brenon Laboratoire Central des Industries Electriques LCIE 33 Avenue du General Leclerc FR-92260 Fontenay-aux-Roses FRANCE Tel: + 33 1 40 95 5519 Fax: +33 1 40 95 5520 Email: Michel Brenon	General requirements (IEC60079-0) Flameproof enclosures "d" (IEC 60079-1) Pressurisation "p" (IEC 60079-2) Powder filling "q" (IEC 60079-5) Oil-immersion "o" (IEC 60079-6) Increased safety "e" (IEC 60079-7) Intrinsic safety "i" (IEC 60079-11) Type of protection "n" (IEC 60079-15) Encapsulation "m" (IEC 60079-18) Apparatus for combustible dusts (IEC 61241-1-1)
United Kingdom (GB) Baseefa Baseefa	Mr Ron Sinclair Baseefa (2001) Limited Baseefa Rockhead Business Park Staden Lane Buxton Derbyshire SK17 9RZ UNITED KINGDOM Tel: +44 1298 766600 Fax: +44 1298 766601 Email: Ron Sinclair	General requirements (IEC60079-0) Flameproof enclosures "d" (IEC 60079-1) Pressurisation "p" (IEC 60079-2) Powder filling "q" (IEC 60079-5) Oil-immersion "o" (IEC 60079-6) Increased safety "e" (IEC 60079-7) Intrinsic safety "i" (IEC 60079-11) Type of protection "n" (IEC 60079-15) Encapsulation "m" (IEC 60079-18) General requirements (IEC 61241- 0) Protection by enclosures 'tD' (IEC 61241-1) Apparatus for combustible dusts (IEC 61241-1-1) Electrical resistance trace heating - Part 1: General and testing requirements (IEC 62086-1)

- **Check Scope**
- **Note contact details**

Start | Homework I... | 050926_IEC... | 051002_BKI... | Swisscom-eu... | http://clblgn... | IECEx: Infor... | 11:12 PM

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Address http://www.iecex.com Go

The IECEx is the IEC scheme for the certification to standards for electrical equipment for explosive atmospheres.

Information | Publications | Members' Area | Online Certificates | Contact | Home

Operational Manuals

Enter Online Certificates

Bulletin

national differences to IEC standards

- Brdo Meeting Green Papers and Photos
- New brochure:
  English :: Russian (courtesy NANIO CCVE)

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Internet

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IEC scheme for certification to standards for safety of equipement for use in explosive atmospheres (iecex scheme):

IECEx Scheme Online Certificate of Conformity

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Views by :

Certificate ref. number

Certificate (proto.)

IECEx Cert. Body (ExCB)

Applicant

Applicant Location

Manufacturer location

Standard used

ExTRs

QARs

Export to MS Excel

Operational manual

IECEx Certificate of Conformity Online Registration System

You are welcomed as **an IECEx Guest User** [reader] and have full access to public information.

Please select from the options available from the left of this screen

The IECEx Online Certificate of Conformity System enables:

- IECEx Certification Bodies to issue new IECEx Certificates of Conformity "On-line"
- Full Public access to consult, view and print issued IECEx Certificates
- View Statistical information
- Export data to an Excel worksheet

> IECEx Certification Bodies click here to create or edit IECEx certificates [Password Protected]

For any questions, please contact Mr. Chris Agius, IECEx Secretary.

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Search

You can use boolean operators "AND" or "OR"

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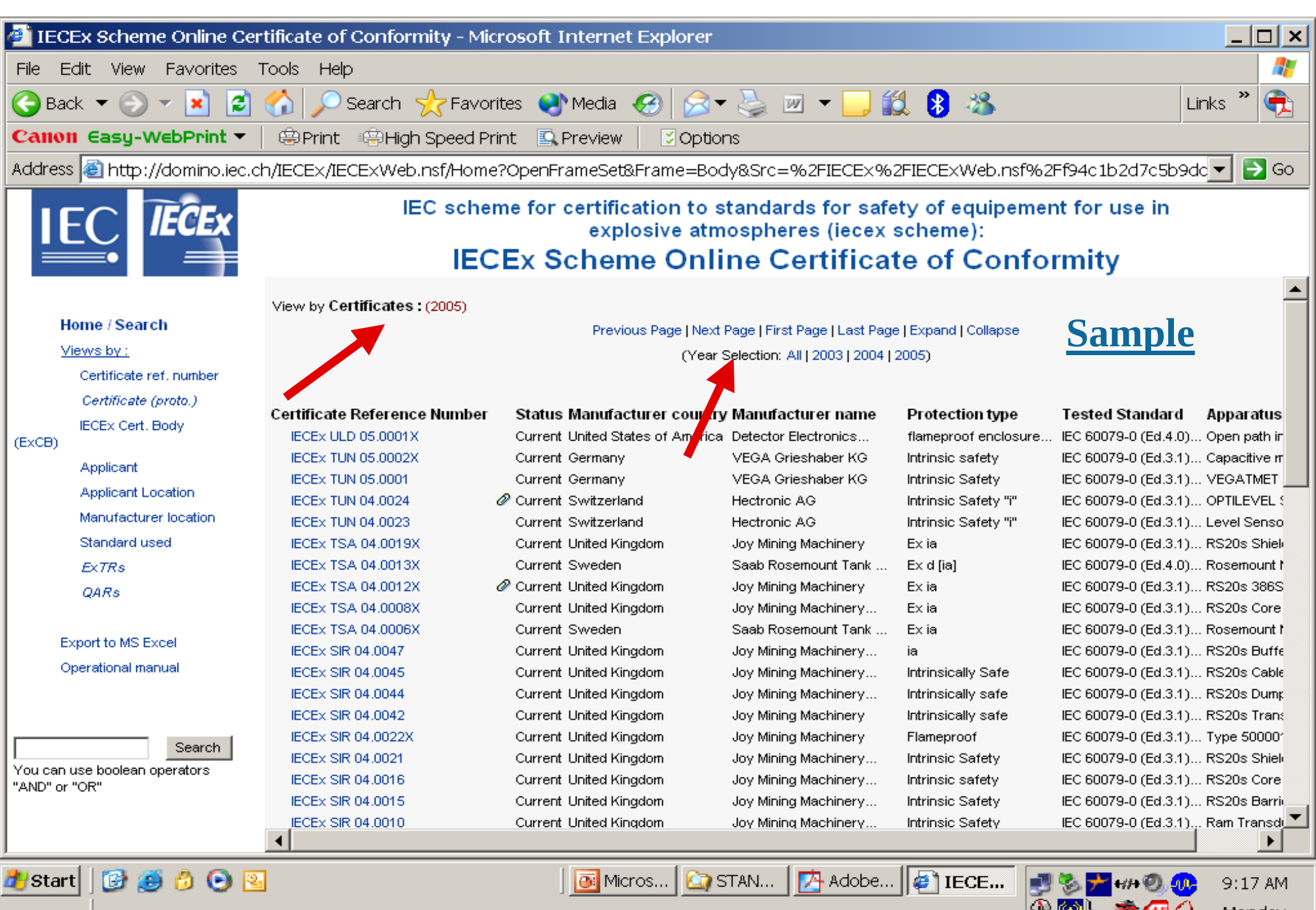
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Canon Easy-WebPrint Print High Speed Print Preview Options
Address http://domino.iec.ch/IECEx/IECExWeb.nsf/Home?OpenFrameSet&Frame=Body&Src=%2FIECEx%2FIECExWeb.nsf%2Ff94c1b2d7c5b9dc Go
IEC scheme for certification to standards for safety of equipement for use in explosive atmospheres (iecex scheme):
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Views by :
Certificate ref. number
Certificate (proto.)
IECEx Cert. Body (ExCB)
Applicant
Applicant Location
Manufacturer location
Standard used
ExTRs
QARs
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Operational manual
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You can use boolean operators "AND" or "OR"
View by Certificates : (2005)
Previous Page | Next Page | First Page | Last Page | Expand | Collapse
(Year Selection: All | 2003 | 2004 | 2005)
Sample
Certificate Reference Number
Status
Manufacturer country
Manufacturer name
Protection type
Tested Standard
Apparatus
IECEx ULD 05.0001X Current United States of America Detector Electronics... flameproof enclosure... IEC 60079-0 (Ed.4.0)... Open path ir
IECEx TUN 05.0002X Current Germany VEGA Grieshaber KG Intrinsic safety IEC 60079-0 (Ed.3.1)... Capacitive m
IECEx TUN 05.0001 Current Germany VEGA Grieshaber KG Intrinsic Safety IEC 60079-0 (Ed.3.1)... VEGATMET
IECEx TUN 04.0024 Current Switzerland Hectronic AG Intrinsic Safety "i" IEC 60079-0 (Ed.3.1)... OPTILEVEL S
IECEx TUN 04.0023 Current Switzerland Hectronic AG Intrinsic Safety "i" IEC 60079-0 (Ed.3.1)... Level Senso
IECEx TSA 04.0019X Current United Kingdom Joy Mining Machinery Ex ia IEC 60079-0 (Ed.3.1)... RS20s Shiel
IECEx TSA 04.0013X Current Sweden Saab Rosemount Tank ... Ex d [ia] IEC 60079-0 (Ed.4.0)... Rosemount T
IECEx TSA 04.0012X Current United Kingdom Joy Mining Machinery Ex ia IEC 60079-0 (Ed.3.1)... RS20s 386S
IECEx TSA 04.0008X Current United Kingdom Joy Mining Machinery... Ex ia IEC 60079-0 (Ed.3.1)... RS20s Core
IECEx TSA 04.0006X Current Sweden Saab Rosemount Tank ... Ex ia IEC 60079-0 (Ed.3.1)... Rosemount T
IECEx SIR 04.0047 Current United Kingdom Joy Mining Machinery... ia IEC 60079-0 (Ed.3.1)... RS20s Buffe
IECEx SIR 04.0045 Current United Kingdom Joy Mining Machinery... Intrinsically Safe IEC 60079-0 (Ed.3.1)... RS20s Cable
IECEx SIR 04.0044 Current United Kingdom Joy Mining Machinery... Intrinsically safe IEC 60079-0 (Ed.3.1)... RS20s Dump
IECEx SIR 04.0042 Current United Kingdom Joy Mining Machinery Intrinsically safe IEC 60079-0 (Ed.3.1)... RS20s Trans
IECEx SIR 04.0022X Current United Kingdom Joy Mining Machinery Flameproof IEC 60079-0 (Ed.3.1)... Type 50000
IECEx SIR 04.0021 Current United Kingdom Joy Mining Machinery... Intrinsic Safety IEC 60079-0 (Ed.3.1)... RS20s Shiel
IECEx SIR 04.0016 Current United Kingdom Joy Mining Machinery... Intrinsic safety IEC 60079-0 (Ed.3.1)... RS20s Core
IECEx SIR 04.0015 Current United Kingdom Joy Mining Machinery... Intrinsic Safety IEC 60079-0 (Ed.3.1)... RS20s Barri
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IEC scheme for certification to standards for safety of equipement for use in explosive atmospheres (iecex scheme):

IECEx Scheme Online Certificate of Conformity

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- IECEx Cert. Body (ExCB)
- Applicant
- Applicant Location
- Manufacturer location
- Standard used
- *ExTRs*
- *QARs*

Export to MS Excel

Operational manual

Search

You can use boolean operators "AND" or "OR"

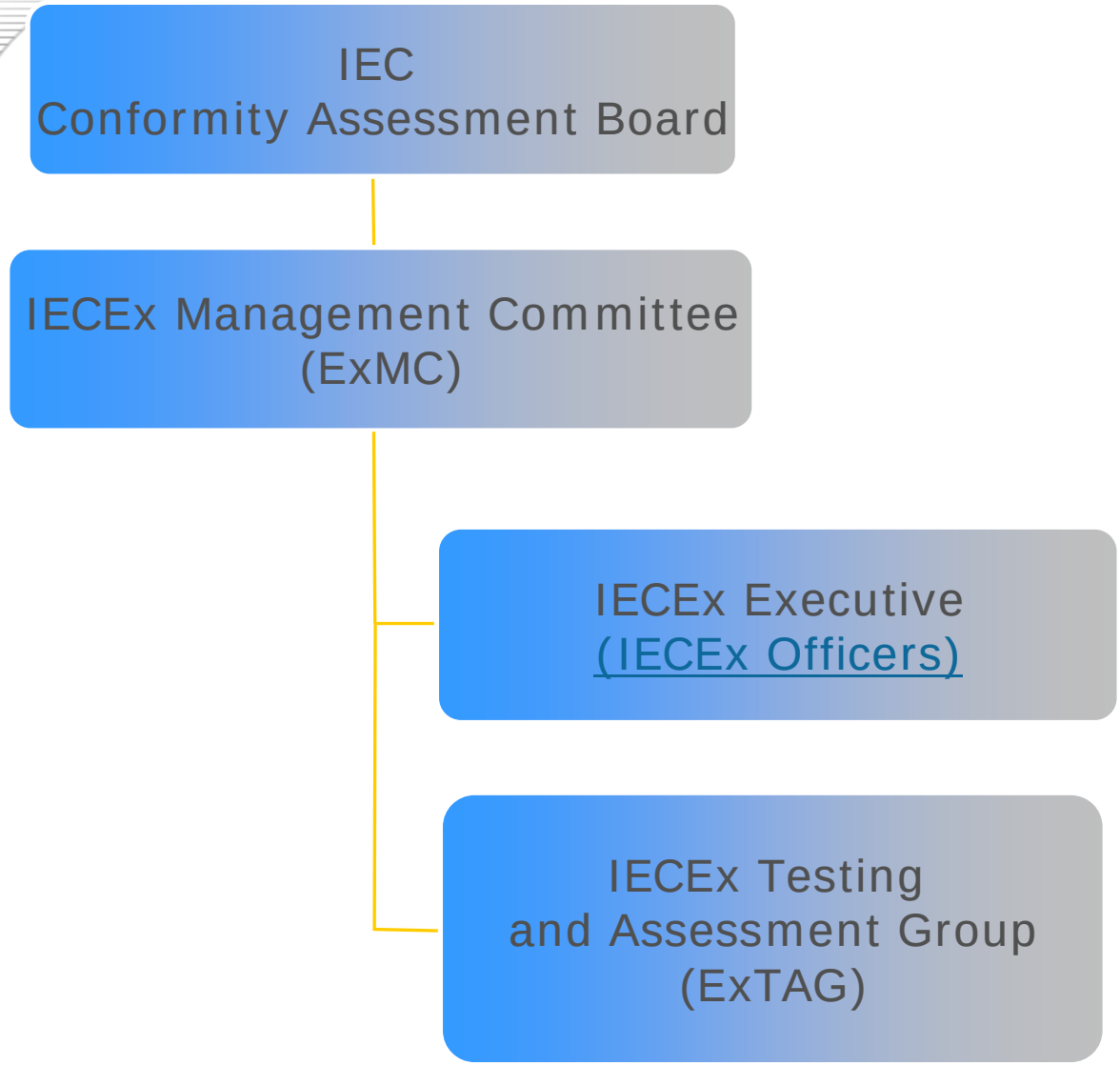
View by **ExCB :** (All)

Previous Page | Next Page | First Page | Last Page | Expand | Collapse

(Year Selection: All | 2005 | 2004 | 2003)

Year	Issuer	Issue Date	Certificate No	Status	Manufacturer	Apparatus
▼2005	277					
	75 ▶ BAS					
	1 ▶ BKI					
	9 ▶ BVS					
	14 ▶ CSA					
	8 ▶ ITS					
	3 ▶ KEM					
	1 ▶ KGS					
	21 ▶ LCI					
	1 ▶ NEM					
	27 ▶ PTB					
	12 ▶ SIM					
	48 ▶ SIR					
	35 ▶ TSA					
	10 ▶ TUN					
	6 ▶ UL					
	6 ▶ ULD					
▶2004	133					
▶2003	14					
	424					

IECEx Management



IECEx Finances

- Self Funded to cover costs
- Operates on a cost recovery basis, not set out to generate profits
- IECEx Management appoint an IECEx Treasurer to oversee ALL matters of Finance for the Scheme
- IECEx accounts are subject to Swiss Law regarding reporting and annual auditing
- IECEx is in a sound financial position.
- Significant points
  - Shrinking of Voluntary resources – Major Scheme Issue
  - IECEx intends to replace reliance on annual dues with User Pay
  - Scheme Integrity and growth require resourcing
  - Published Schedule of Fees

Why Should I be confident when purchasing Ex products covered by an IECEx Certificate of Conformity?

The IECEx Way for Ex Certification

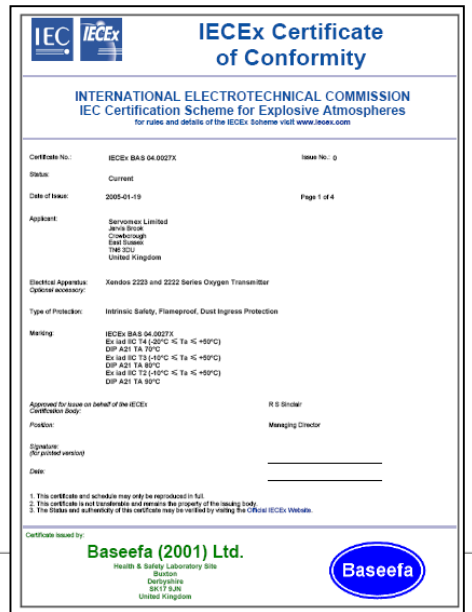
ExCB Country A

ExCB Country B

ExCB Country C

ExCB Country D

Common Rules and Procedures adopted by ALL ExCBs and ExTLs



IECEx Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION
IEC Certification Scheme for Explosive Atmospheres
for rules and details of the IECEx Scheme visit www.iecex.com

Certificate No.: IECEx BAS 04.0027X — Issue No.: 0

Status: Current

Date of Issue: 2005-01-19 — Page 1 of 4

Applicant: Servomex Limited, Jarvis Brook, Crowborough, East Sussex, TN6 3DU, United Kingdom

Electrical Apparatus: Xendos 2223 and 2222 Series Oxygen Transmitter
Optional accessory:

Type of Protection: Intrinsic Safety, Flameproof, Dust Ingress Protection

Marking: IECEx BAS 04.0027X
Ex ia IIC T4 (-20°C ≤ Ta ≤ +50°C)
DIP A21 TA 70°C
Ex ia IIC T3 (-10°C ≤ Ta ≤ +50°C)
DIP A21 TA 80°C
Ex ia IIC T2 (-10°C ≤ Ta ≤ +50°C)
DIP A21 TA 90°C

Approved for issue on behalf of the IECEx Certification Body: R S Sinclair

Position: Managing Director

Signature: (for printed version)

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.

Certificate issued by:
Baseefa (2001) Ltd.
Health & Safety Laboratory Site, Buxton, Derbyshire, SK17 9JN, United Kingdom

Baseefa

IECEx Acceptance of ExCB + ExTL

- **All** Test Laboratories and Certification bodies are assessed
- Peer Assessment – Foundation
- Assessment to
  - ISO/IEC 17025 (Assessment of Test Laboratories)
  - IECEx Rules, IECEx 02
  - IECEx TGDs (Technical Guidance Documents)
  - IEC/ISO Guide 65 (Assessment of Certification Bodies)
- Implementation of IECEx Rules, Operational Procedures and decisions
- ExCB Ability to audit Ex Quality Management Systems
- Reports prepared
  - Sites Assessment, TGD, 17025, Guide 65
  - Only Compliant Reports issued for voting on new bodies

Summary of IECEx Assessment Records

Retained by IECEx Secretariat

- **Original Application Information + Forms**
- **Completed TGDs + Check Lists**
- **Site Assessment Audit Plan, Reports + Notes, eg Follow Up Actions**
- **Surveillance Schedule and Information**

Available to IECEx Member Bodies

- **Summary Voting Report** — **Available to ALL IECEx Member Bodies**
- **Surveillance information and reporting by IECEx Secretariat**

Surveillance of ExCBs and ExTLs

- Where National accreditation found to comply with IECEx requirements
  - 6 monthly check by Secretariat on status and scope of National accreditation
  - Internal auditing by ExCB and ExTL
  - Notification of any changes, eg re-location, ownership, loss of key personnel etc
  - 5 Year re-assessments

- Where Body does not have acceptable national accreditation
  - Annual surveillance visits by an IECEx Assessor
  - Notification of any change eg re-location, ownership, loss of key personnel etc
  - 5 Year re-assessments
  - Where ExTL has national accred. But ExCB does not – annual surveillance shall be conducted

Surveillance of the IECEx System

- Dedicated Technical Secretariat with the role of Scheme CEO
- Secretariat reports to IECEx Chairman and Officers between meetings and to full IECEx Management Committee (ALL Member Countries) at Annual meetings
- IECEx Constitution rules require the full Management Committee (ALL Member Countries) to meet at least annual
- Annual meetings of Technical Committee, ExTAG
- Constant monitoring of the Scheme, including industry inquiries by the IECEx Secretariat and Officers.
- IECEx Chairman and Secretariat report TWICE per year to the IEC Conformity Assessment Board (12 Member IEC Board) at meetings in June and October
- Any IECEx Member Country may request a change or improvement.

IECEx Continual strive to be the Global Centre of Excellence in the Ex Field