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

**TITLE: IECEx Assessment Report for the acceptance of** **IBExU Institut für Sicherheitstechnik GmbH, an Accepted Ex Certification Body (ExCB) and Test Laboratory, (ExTL) for scope extension to include ISO 80079-36, IS0 80079-37.**

**Circulated to: Ex Management Committee, ExMC**

**INTRODUCTION**

During the IECEx re-assessment of IBExU of Germany, an Accepted Ex Certification Body, ExCB, and an Accepted Ex Test Laboratory, ExTL, within the IECEx System, Equipment Scheme 02, an assessment was also conducted concerning a scope extension application to cover both updated editions of Standards inclusion of the following new Standards within their scope.

* ISO 80079-36 Part 36: Non-electrical equipment for explosive atmospheres - Basic method and requirements
* ISO 80079-37 Part 37: Non-electrical equipment for explosive atmospheres - Non electrical type of protection constructional safety "c", control of ignition source "b", liquid immersion "k"
* ISO 16852: Flame arresters — Performance requirements, test methods and limits for use

This report details the assessment findings of this scope extension with the IECEx Assessor, recommending acceptance of the above scope extension for both the ExCB and ExTL operations of IBExU and is now hereby submitted for voting by ExMC.

Please consider the assessment report and return the completed voting form, separate Word document, to the [**Secretariat**](mailto:chris.agius@iecex.com) by **2018 04 26**

**Your speedy response to the voting process will be very much appreciated.**

*Chris Agius*

**IECEx Secretariat**

|  |  |
| --- | --- |
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IEC System for certification to standards relating to equipment for use in Explosive Atmospheres (IECEx System)

IECEx Assessment Report Form

IECEx Assessment Report Form for use by IECEx Assessment Teams to report Assessments conducted according to the IECEx Assessment Procedures of

1. Operational Document IECEx OD003-2 for the Certified Equipment Scheme
2. Operational Document IECEx OD316-5 for the Certified Service Facility Scheme
3. Operational Document IECEx OD422 for the IECEx Conformity Mark Licensing System

IECEx ExCB/ExTL assessment report for IBExU

Institut für Sicherheitstechnik GmbH

INTERNATIONAL  
ELECTROTECHNICAL  
COMMISSION

CONTENTS

[1 Assessment information 5](#_Toc504162878)

[1.1 Type of Body covered by this assessment: 5](#_Toc504162879)

[1.2 Type of assessment: 5](#_Toc504162880)

[1.3 Details of body 5](#_Toc504162881)

[1.3.1 Country 5](#_Toc504162882)

[1.3.2 Name of body 5](#_Toc504162883)

[1.3.3 Name and title of nominated principal contact 5](#_Toc504162884)

[1.4 Assessment information 5](#_Toc504162885)

[1.4.1 Members of the assessment team 5](#_Toc504162886)

[1.4.2 Place(s) of assessment 5](#_Toc504162887)

[1.4.3 Assessment date(s) 5](#_Toc504162888)

[1.5 Application information and background information on the assessment 5](#_Toc504162889)

[1.6 Scopes 6](#_Toc504162890)

[1.6.1 ExCB scope for equipment certification scheme 6](#_Toc504162891)

[1.6.2 ExTL scope 7](#_Toc504162892)

[2 Common information 7](#_Toc504162893)

[2.1 Legal entity of body 7](#_Toc504162894)

[2.2 History 8](#_Toc504162895)

[2.3 Documentation 8](#_Toc504162896)

[2.3.1 Quality manual 8](#_Toc504162897)

[2.3.2 Procedures 8](#_Toc504162898)

[2.3.3 Work instructions 8](#_Toc504162899)

[2.3.4 Records (including test records where relevant) 8](#_Toc504162900)

[2.3.5 Document change control 9](#_Toc504162901)

[2.4 Confidentiality 9](#_Toc504162902)

[2.5 Communication with public and customers (Hard copy and Electronic) 9](#_Toc504162903)

[2.6 Recognitions and agreements 9](#_Toc504162904)

[2.7 Internal audit 9](#_Toc504162905)

[2.8 Management review 9](#_Toc504162906)

[2.9 Contracting, subcontracting and witness testing 9](#_Toc504162907)

[2.9.1 Contracting 9](#_Toc504162908)

[2.9.2 Subcontracting 10](#_Toc504162909)

[2.9.3 Witness testing 10](#_Toc504162910)

[2.10 Training and competence 11](#_Toc504162911)

[2.11 Complaints and appeals (including appeals to IECEx) 11](#_Toc504162912)

[2.12 Impartiality 11](#_Toc504162913)

[2.13 Commenting on ExTAG Documents 11](#_Toc504162914)

[2.14 Special facts to be noted 11](#_Toc504162915)

[2.15 Supporting documentation 11](#_Toc504162916)

[2.16 Recommendations 12](#_Toc504162917)

[3 ExCB for IECEx Certified Equipment Scheme 13](#_Toc504162918)

[3.1 Assessment references 13](#_Toc504162919)

[3.1.1 General references 13](#_Toc504162920)

[3.1.2 Additional references applied for this assessment 13](#_Toc504162921)

[3.2 ~~Candidate~~ ExCB persons interviewed 13](#_Toc504162922)

[3.3 Associated ExTL(s) 13](#_Toc504162923)

[3.4 Associated certification functions 13](#_Toc504162924)

[3.5 National marks and certificates 13](#_Toc504162925)

[3.6 Standards accepted 13](#_Toc504162926)

[3.7 National differences to IEC standards 13](#_Toc504162927)

[3.8 Organisation 14](#_Toc504162928)

[3.8.1 Names, titles and experience of the senior executives 14](#_Toc504162929)

[3.8.2 Name, title and experience of the quality management representative 14](#_Toc504162930)

[3.8.3 Name and title of signatories for certification 14](#_Toc504162931)

[3.8.4 Other employees in ExCB activity 14](#_Toc504162932)

[3.9 Organizational structure 14](#_Toc504162933)

[3.10 Indemnity insurance 14](#_Toc504162934)

[3.11 Resources 14](#_Toc504162935)

[3.12 Committees (such as governing or advisory boards) 14](#_Toc504162936)

[3.13 Certification operations 14](#_Toc504162937)

[3.13.1 National approval/certification methods 14](#_Toc504162938)

[3.13.2 Certification policy 14](#_Toc504162939)

[3.13.3 Application for certification 15](#_Toc504162940)

[3.13.4 Certification decision 15](#_Toc504162941)

[3.13.5 Suspension and cancellation of certificates 15](#_Toc504162942)

[3.14 Certificates issued 15](#_Toc504162943)

[3.15 National accreditation 16](#_Toc504162944)

[3.16 Assessment of manufacturers and issue of QARs 16](#_Toc504162945)

[3.17 Comments (including issues found during assessment) 16](#_Toc504162946)

[4 ExTL for IECEx Certified Equipment Scheme 18](#_Toc504162947)

[4.1 Assessment references 18](#_Toc504162948)

[4.1.1 General references 18](#_Toc504162949)

[4.1.2 Additional references applied for this assessment 18](#_Toc504162950)

[4.2 ~~Candidate~~ ExTL persons interviewed 18](#_Toc504162951)

[4.3 Associated ExCB(s) 18](#_Toc504162952)

[4.4 Organisation 18](#_Toc504162953)

[4.4.1 Names, titles and experience of the senior executives 18](#_Toc504162954)

[4.4.2 Name, title and experience of the quality management representative 18](#_Toc504162955)

[4.4.3 Other employees in ExTL activity 19](#_Toc504162956)

[4.5 Organizational structure 19](#_Toc504162957)

[4.6 Resources 19](#_Toc504162958)

[4.7 Test reports issued 19](#_Toc504162959)

[4.8 National accreditation 20](#_Toc504162960)

[4.9 Calibration 21](#_Toc504162961)

[4.10 Tests witnessed during the assessment visit 21](#_Toc504162962)

[4.11 Participation in IECEx Proficiency Testing Programs 22](#_Toc504162963)

[4.12 Comments (including issues found during assessment) 22](#_Toc504162964)

[Annexes 22](#_Toc504162965)

[Annex A Overall Organisation Chart 23](#_Toc504162966)

[Annex B Accreditation Certificate for ISO/IEC 17065 24](#_Toc504162967)

[Annex C Accreditation Certificate for ISO/IEC 17025 25](#_Toc504162968)

# Assessment information

## Type of Body covered by this assessment:

|  |  |
| --- | --- |
| ExCB for IECEx Certified Equipment Scheme | ✓ |
| ExTL for IECEx Certified Equipment Scheme | ✓ |
| ExCB for IECEx Certified Service Facilities Scheme |  |
| ExCB for IECEx Conformity Mark Licensing System |  |

NOTE 1 ExCB - IECEx Certification Body

NOTE 2 ExTL - IECEx Testing Laboratory

## Type of assessment:

|  |  |
| --- | --- |
| Pre-assessment for candidate body |  |
| Initial assessment for candidate body |  |
| Surveillance |  |
| Re-assessment | ✓ |
| Scope extension | ✓ |

## Details of body

### Country

Germany

### Name of body

IBExU Institut für Sicherheitstechnik GmbH

### Name and title of nominated principal contact

|  |  |  |
| --- | --- | --- |
| Name | Title | E-mail address |
| Kristin Krumbiegel | Management Representative | k.krumbiegel@ibexu.de |

## Assessment information

### Members of the assessment team

|  |  |
| --- | --- |
| Name | Role |
| Jim Munro | IECEx Lead Assessor |
| Ajay Maira | IECEx Assessor (and Lead Assessor in training) |

### Place(s) of assessment

|  |  |
| --- | --- |
| IBExU Institut für Sicherheitstechnik GmbH  Fuchsmühlenweg 7  09599 Freiberg  Germany |  |

### Assessment date(s)

14 to 16 June 2017

## Application information and background information on the assessment

This is a re-assessment, including a scope increase for ISO 80079-36, ISO 80079-37, ISO 16852 and IEC/IEEE 60079-30-1

## Scopes

### ExCB scope for equipment certification scheme

| Number | Title | Comments, eg if scope change |
| --- | --- | --- |
| IEC 60079-0  Edition 6.0 | Explosive atmospheres - Part 0: Equipment - General requirements | ✓ |
| IEC 60079-1  Edition 7.0 | Explosive atmospheres - Part 1: Equipment protection by flameproof  enclosures “d” | ✓ |
| IEC 60079-2  Edition 6.0 | Explosive atmospheres - Part 2: Equipment protection by pressurized  enclosure «p» | ✓ |
| IEC 60079-5  Edition 4.0 | Explosive atmospheres - Part 5: Equipment protection by powder filling «q» | ✓ |
| IEC 60079-6  Edition 4.0 | Explosive atmospheres - Part 6: Equipment protection by oil immersion «o» | ✓ |
| IEC 60079-7  Edition 5.0 | Explosive atmospheres - Part 7: Equipment protection by increased  safety "e" | ✓ |
| IEC 60079-11  Edition 6.0 | Explosive atmospheres - Part 11: Equipment protection by intrinsic safety “i” | ✓ |
| IEC 60079-15  Edition 4.0 | Explosive atmospheres – Part 15: Equipment protection by type of protection "n" | ✓ |
| IEC 60079-18  Edition 4.0 | Explosive atmospheres – Part 18: Equipment protection by encapsulation “m” | ✓ |
| IEC 60079-25  Edition 2.0 | Explosive atmospheres – Part 25: Intrinsically safe electrical systems | ✓ |
| IEC 60079-26  Edition 3.0 | Explosive atmospheres - Part 26: Equipment with equipment protection  level (EPL) Ga | ✓ |
| \*IEC 60079-27  Edition 2.0 | Explosive atmospheres – Part 27: Fieldbus intrinsically safe concept (FISCO) | ✓ |
| IEC 60079-28  Edition 2.0 | Explosive atmospheres - Part 28: Protection of equipment and transmission systems using optical radiation | ✓ |
| \*IEC 60079-30-1  Edition 1.0 | Explosive atmospheres - Part 30-1: Electrical resistance trace heating – General and testing requirements | ✓ |
| IEC/IEEE 60079-30-1  Edition 1.0 | Explosive atmospheres – Part 30-1: Electrical resistance trace heating – General and testing requirements | Scope extension to IEC 60079-30-1 Edition 1.0 (above)  ✓ |
| IEC 60079-31  Edition 2.0 | Explosive atmospheres – Part 31: Equipment dust ignition protection by enclosure "t" | ✓ |
| IEC 60079-35-1  Edition 1.0 | Explosive atmospheres – Part 35-1: Caplights for use in mines susceptible to firedamp – General requirements – Construction and testing in relation to the risk of explosion | ✓ |
| IS0 80079-36  Edition 1.0 | Explosive atmospheres - Part 36: Non-electrical equipment for explosive atmospheres – Basic method and requirements | Scope extension  ✓ |
| ISO 80079-37  Edition 1.0 | Explosive atmospheres - Part 37: Non-electrical equipment for explosive atmospheres – Non electrical type of protection constructional safety ”c” control of ignition source ”b”, liquid immersion ”k” | Scope extension  ✓  (With exclusion of Ex b at this point) |
| ISO 16852  2016 Edition 2 | Flame arresters — Performance requirements, test methods and limits for use | Scope extension  ✓ |
| \*IEC 61241-0  Edition 1.0 | Electrical apparatus for use in the presence of combustible dust - Part 0: General requirements | ✓ |
| \*IEC 61241-1  Edition 1.0 | Electrical apparatus for use in the presence of combustible dust - Part 1: Protection by enclosure “tD” | ✓ |
| \*IEC 61241-1-1  Edition 2.0 | Electrical apparatus for use in the presence of combustible dust - Part 1-1: Electrical apparatus protected by enclosures and surface temperature limitation - Specification for apparatus | ✓ |
| \*IEC 61241-4  Edition 1.0 | Electrical apparatus for use in the presence of combustible dust - Part 4: Protection by pressurization "pD" | ✓ |
| \*IEC 61241-11  Edition 1.0 | Electrical apparatus for use in the presence of combustible dust – Part 11: Protection by intrinsic safety 'iD' | ✓ |
| \*IEC 61241-18  Edition 1.0 | Electrical apparatus for use in the presence of combustible dust - Part 18: Protection by encapsulation "mD" | ✓ |
| \*IEC 62013-1  Edition 2.0 | Caplights for use in mines susceptible to firedamp - Part 1: General requirements - Construction and testing in relation to the risk of explosion | ✓ |
| \*IEC 62086-1  Edition 1.0 | Electrical apparatus for explosive gas atmospheres - Electrical resistance trace heating - Part 1: General and testing requirements | ✓ |

NOTE 1 Standards shown with an asterisk (\*) are superseded standards

NOTE 2 Unless otherwise indicated, earlier editions of standards (even if with a different number) are considered to be covered in the above scope for the purposes of the assessment.

NOTE 3 The above list highlights any extension of scope in the list above for new standards or later editions of standards already in scope.

### ExTL scope

The ExCB has an integral ExTL. The ExTL scope is the same as for the ExCB.

# Common information

## Legal entity of body

IBExU is registered by the Amtsgericht Chemnitz (local court) under number HRB896. The document was presented during the assessment visit and further confirmed by correspondence on 2 November 2017.

IBExU GmbH is a 100% private owned company. IBExU is self funded, relying on income from certification, auditing, testing, training and risk analysis.

IBExU has been affiliated as a scientific institute to the Technische Universität Bergakademie Freiberg since 1995.

IBExU is accredited as Notified Body (identification number: 0637) in accordance with Directive 2014/34/EU.

## History

IBExU has an almost 89-year-old tradition in Freiberg

The foundation of the “Sächsischen Versuchsstrecke an der Bergakademie Freiberg” in 1928 (to 1991: “Institut für Bergbausicherheit (IfB)”, department: fires and explosions) was the beginning of the development of a scientific and testing technical centre for the special subjects of fire and explosion prevention in Central Germany.

From 1949 until 1991 the “Institut für Bergbausicherheit (IfB, Versuchsstreckeb Freiberg)” was the “Staatshoheitrechtliche Institut der DDR” for the blasting explosives, fire and explosion protection for mining and industry.

With the reunification, the “IfB” was annulled formally in 1991. In December 1990 was the foundation of IBExU Institut für Sicherheitstechnik GmbH with support of the “Bundesministerium für Wirtschaft” with the objective to improve the scientific know-how of the “IfB” and the work of the “Versuchsstrecke Freiberg” for the protection of human beings, property and the environment against the hazards generated by accidents.

IBExU developed into a European recognized institution for research, technical engineering services and safety tests in the fields of plant and process engineering, safety and accident prevention, and protection against fire, explosions and emissions.

## Documentation

### Quality manual

IBExU has a general quality manual which is “Qualitätsmanagementhandbuch - Teil 1“ - „QH 001” to „QH 033“. At the time of the assessment visit, this was at Revision 6.

IBExU has a section of the quality manual which specifically addresses IECEx; this is: “Qualitätsmanagementhandbuch - Teil 3 - ExTL / ExCB IECEx System”. At the time of the assessment visit, this was at Revision 4 and the requirements of this met the requirements of IECEx with the exception of the few issues that were raised. These were later resolved to the satisfaction of the assessment team.

### Procedures

All controlled procedures are held and available in the server Q: QM Dokumentation. This is a secure location used for technical procedures. Only the Management Representative and the Managing Director are authorised to make changes. The procedures are also marked where changes in one may require changes in related procedures. The relevant procedure for documentation control is QH-015. The Procedures were found to meet the requirements of the IECEx.

### Work instructions

Work instructions are identified in VA 05-5-001 and methods to revise these are described in detail. Work instructions are available to technical staff through server Q: QM Dokumentation. The Work Instructions were found to meet the requirements of the IECEx.

### Records (including test records where relevant)

Test records are completed on documents raised for the particular project. These are then stored with the project engineer or manager. The organisation is moving to electronic filing, and the necessary printed and handwritten documents will be scanned into the system.

Test records are retained indefinitely.

Electronic files are saved on two duplicated servers.

Procedure VA 16 0 003 addresses the requirements for records.

### Document change control

Document change control is addressed in procedure “Qualitätsmanagementhandbuch - Teil 1“ - „QH 015“. Quality documents are maintained and controlled as hard copies, but with current copies also accessible to staff on the intranet.

## Confidentiality

(For staff, contractors and members of advisory bodies)

For staff, part of each Employment Contract (section 4) contains requirements for confidentiality. An example of a Contract with this content was viewed.

Confidentiality is also mentioned in the Quality Manual.

For customers, confidentiality is addressed in the ‘General Contractual Terms and Conditions’ 22FB99 Version 161.

For visitors, FB 18 00 01 form is provided to prohibit taking photos and taking copies of documents, and visitors are required to sign it.

## Communication with public and customers (Hard copy and Electronic)

Communication to the public and general information for customers is provided in [www.ibexu.com](http://www.ibexu.com) which has sufficient information in a well-designed website.

## Recognitions and agreements

Cooperation agreements for various tests have been signed with:

TÜV Rheinland Industrie Service GmbH

Physikalisch Technische Bundesanstalt

CEcert GmbH

Bureau Veritas Consumer Product Services Germany GmbH

## Internal audit

Internal audit is addressed in “Qualitätsmanagementhandbuch - Teil 1“ - „QH 029“. The records for the 2015 audits showed the full scope of the audit schedule had been applied. However, for 2016, audits did not cover the full scope of schedule for the various sections. This issue was subsequently addressed to the satisfaction of the assessment team by the provision of more resources. It was noted that all the audit records contained good detail.

## Management review

Management review is addressed in “Qualitätsmanagementhandbuch - Teil 1“ - „QH 019“.

The management review conducted on 12 June 2017, was looked at by the assessment team. The review covered the following topics: internal audits, external audits, orders received, feedback from customers from seminars conducted, emails, corrective actions, changes in the Standards, new markets, new customers, employee training, management systems, and key performance indicators.

## Contracting, subcontracting and witness testing

### Contracting

There are no contracted staff used by IBExU. All staff used are employees of IBExU.

### Subcontracting

The following tests are, or may be, subcontracted by the body:

Document FB 03 1 801 is used when subcontracting. While filling in the document, IBExU as the ExCB checks compliance with the scope of IBExU as the ExTL. If there is a difference, the ExCB checks the validity of the subcontractors, based on accreditation certificates or on the IECEx scope of the subcontractors (equivalent to evaluation done by a third party). If there is an invalid accreditation or IECEx scope they request the subcontractor to update this, failing which they look for another subcontractor.

|  |  |  |
| --- | --- | --- |
| Standard | Clause | Test |
| IEC 60079-0 Edition 6.0 | 26.10 | Resistance to light |
| IEC 60079-7 Edition 5.0 | 6.3.6 | Vibration test for luminaries with bi-pin lamps. |
| 6.6.3 | Mechanical shock test (IEC 60068-2-27) |
| IEC 60079-15 Edition 4.0 | 22.9 | Tests for electronic starters |
| 22.10 | Test for wiring of luminares |
| 22.11 | Mechanical shock test of batteries |
| IEC 60079-28 Edition 2.0 | 5.2.3 | Pulsed radiation |
| 5.2.4 | Ignition tests |
| IEC/IEEE 60079-30-1 Edition 1.0 | 5.1.7 | Cold bend test |
| 5.1.9 | Integral components resistance to water test |
| 5.1.12 | Thermal performance test |
| 5.1.13 | Determination of maximum sheath temperature |
| 5.1.16 | Outdoor exposure test |
| ISO 80079-37 Edition 1.0 | 8.2 | Type tests for equipment with type of protection control of ignition source “b” |

### Witness testing

The procedure for witness testing is “Verfahrensanweisung - Außer-Haus-/Beaufsichtigung von Prüfungen nach IECEx OD 024” - “VA 10 7 001“. This covers all the key aspect of OD024. Evidence was provided that contracts are in place and the required information is being provided to the IECEx Secretariat. One issue was raised for a project which used data from under an OD024 approach, but without witnessing taking place. This was subsequently resolved to the satisfaction of the assessment team, which included a revised procedure and training, and a comparison of the test data from this specific test with data generated by the ExTL on earlier occasions.

## Training and competence

Training and competence are addressed in “Qualitätsmanagementhandbuch - Teil 1“ - „QH 021“.

Details of staff competencies are included in the site assessment report. Planning of further training is on a register called ‘training plan\_0’. Updating done by Quality Representative based on staff requests and approval by management.

## Complaints and appeals (including appeals to IECEx)

Complaints and appeals are addressed in “Qualitätsmanagementhandbuch - Teil 1“ - „QH 030“

A detailed corrective action register is being used, with follow-up on the status. In 2017, about 10 items were considered (improvement, preventive and corrective actions). This register is available to all staff in the Q: server, but as read-only.

At the time of the assessment visit, the appeals process did not include information regarding, when necessary, the availability of IECEx to address the appeal. This was subsequently included in document 20FB08v170 and 20FB09v170 and assessed as meeting the requirements of IECEx.

## Impartiality

Impartiality is addressed in “Qualitätsmanagementhandbuch - Teil 3 - ExTL / ExCB IECEx System”. A risk analysis form is used when required to prevent failure of impartiality in “00VD899v171\_Sicherung der Unparteilichkeit – Risiken“. The mechanism for ensuring impartiality was unclear at the time of the assessment visit, but this was subsequently clarified to the satisfaction of the assessment team.

## Commenting on ExTAG Documents

IBExU has a system that covers updates and comments on both ExTAG and ExMC documents. TBKON (German membership of IECEx) provides advice on IECEx documents that have been issued. These are then forwarded by the Ex Management Representative to the relevant technical expert. For ExMC documents, the vote is then provided back to TBKON who then send the vote to IECEx. TBKON also includes manufacturers.

## Special facts to be noted

Nil.

## Supporting documentation

Copies of additional supporting information for this assessment have been provided to the applicant and the IECEx Secretariat. These are included in a site assessment report or provided separately and include:

* Details of issues raised and how these have been resolved
* Checklist for ISO/IEC 17065
* Completed Technical Capability Document (TCD)
* Photos of the facilities/tests witnessed are included in the above TCD
* Assessors’ notes

## Recommendations

Based on the assessment performed on 14 to 16 June 2017 and post assessment reviews, IBExU is recommended for continued acceptance in the IECEx scheme as:

* An ExCB in the IECEx Certified Equipment Scheme
* An ExTL in the IECEx Certified Equipment Scheme

This is according to the scope of the standards listed in this document, including the extension of scope.

|  |  |
| --- | --- |
| Jim Munro | Ajay Maira |
| IECEx Lead Assessor | IECEx Assessor  (IECEx Lead Assessor in training) |

Date: 2018-03-12

# ExCB for IECEx Certified Equipment Scheme

## Assessment references

### General references

1. IECEx02 IECEx Certified Equipment Scheme covering equipment for use in explosive atmospheres – Rules of Procedure
2. OD003-2 Assessment, surveillance assessment and re-assessment of ExCBs and ExTLs operating in the IECEx 02, IECEx Certified Equipment Scheme
3. ISO/IEC 80079-34 Edition 1, Explosive atmospheres – Part 34: Application of quality systems for equipment manufacture
4. OD009 Issuing of CoCs, ExTRs and QARs
5. IECEx Document OD 025 Guidelines on the Management of Assessment and Surveillance programs for the assessment of Manufacturer’s Quality Systems in accordance with the IECEx Scheme
6. OD0026 IECEx Certified Equipment Scheme – Guidelines for the qualification of Lead Auditor and Auditors, in accordance with the IECEx System
7. ISO/IEC 17065: 2012, Edition 1, General requirements for bodies operating product certification systems Conformity assessment — Requirements for bodies certifying products, processes and services
8. IECEx Technical Capability Document (TCD)
9. ExTAG decision sheets (DSs)

NOTE The latest editions of the above documents were applied

### Additional references applied for this assessment

OD 280 IECEx Certified Equipment Scheme – Guide to Certification of Non-electrical Equipment and Protective Systems

## ~~Candidate~~ ExCB persons interviewed

|  |  |
| --- | --- |
| Name | Position |
| D. Bauersfeld | Managing Director |
| K. Krumbiegel | Quality Management Representative / Auditor |
| K. Willamowski | Deputy Head of ExCB |

## Associated ExTL(s)

The ExTL is integral with the ExCB.

## Associated certification functions

IBExU only issues IECEx and ATEX certificates.

## National marks and certificates

IBExU is a notified body under the ATEX directive.

## Standards accepted

See clause 1.6 of this report

## National differences to IEC standards

National differences to IEC standards are those for the European differences listed in the latest version of the IECEx Scheme Bulletin.

## Organisation

### Names, titles and experience of the senior executives

|  |  |  |
| --- | --- | --- |
| Name | Title | Experience |
| T. Redeker | Prof. Dr. rer. nat. | 46 years in Ex / 58 years in general |
| A. Henker | Dipl.-Ing. (FH) | 12 years in Ex / 32 years in general |
| K. Willamowski | Dipl.-Ing. | 18 years in Ex / 24 years in general |

### Name, title and experience of the quality management representative

|  |  |  |
| --- | --- | --- |
| Name | Title | Experience |
| K. Krumbiegel | Dipl.-Ing. (BA) | 7 years in Ex / 11 years in quality |

### Name and title of signatories for certification

|  |  |  |
| --- | --- | --- |
| Name | Title | Comments |
| T. Redeker | Prof. Dr. rer. nat. | - |
| A. Henker | Dipl.-Ing. (FH) | - |
| K. Willamowski | Dipl.-Ing. | - |

### Other employees in ExCB activity

|  |  |  |
| --- | --- | --- |
| Name | Title | Responsibility and Experience in Ex |
| K. Krumbiegel | Dipl.-Ing. (BA) | 7 years in Ex / 11 years in quality |

## Organizational structure

Organisation chart was provided in QH 007 Revision 10. A copy is attached in Annex A of this report.

## Indemnity insurance

IBExU has a current indemnity insurance policy AXA Nr. 50235006341 dated 2017-01-25 for EUR 3,000,000 valid to 2018-01-01. This covers the scope of activities.

## Resources

IBExU was found to have appropriate resources of staff, facilities and procedures.

## Committees (such as governing or advisory boards)

IBExU has a Certification Advisory Board with the procedure and membership requirements in document 20FB98v170\_Sicherung der Unparteilichkeit - Mitgliedervereinbarung\_xx-IBExU (Mechanism to ensure impartiality - Membership agreement).

## Certification operations

### National approval/certification methods

As noted earlier, IBExU operates as an ATEX notified body. Certification methods are provided in document VA097001\_5\_Zertifizierungsverfahren nach IECEx Scheme\_krum\_EN”

### Certification policy

The quality policy, which includes certification, is provided in “Qualitätsmanagementhandbuch - Teil 1“ - „QH 001” to „QH 033“.

A specific policy for product certification is also available in “Zertifizierungsprogramm | Produkt 20FB08” and for system certification is available in “Zertifizierungsprogramm | System 20FB09”.

### Application for certification

IBExU have a form that is used when an application is made for certification. At the time of the assessment visit, the form did not include the non-electrical types of protection, but the form was subsequently revised to include them. The revision of the form also included provision for the manufacturer to include the edition of the standard for which they are seeking certification. The revised application form meets the requirements of IECEx.

### Certification decision

The process for making the certification decision is described in Process Instruction VA 09 7 001 Rev 5 and Work Instruction AA 05 7 004 Rev 4. It includes information of the complete process of certification, covering the application form, its review, the test plan, test report, quality auditing, certification drafting and issue, and maintenance of the auditing requirements.

### Suspension and cancellation of certificates

Suspension and cancellation of certificates are described in Work Instruction AA 05 7 004 Rev 4. This latest revision includes the information that cancelling of certificates can only be done with the support of the IECEx Secretariat.

## Certificates issued

The number of certificates issued under for the preceding four years for IECEx is shown below.

| Standard numbers | Type of protection or other identifying information | Number of issued certificates (for last 4 years) | | | | Total |
| --- | --- | --- | --- | --- | --- | --- |
|  |  | 2014 | 2015 | 2016 | 2017 (until May 2017) |  |
| IEC 60079-0 | Equipment - General requirements | 17 | 21 | 38 | 10 | 86 |
| IEC 60079-1 | Equipment protection by flameproof enclosures "d" | 5 | 5 | 12 | 1 | 23 |
| IEC 60079-2 | Equipment protection by pressurized enclosure "p" | 0 | 0 | 0 | 0 | 0 |
| IEC 60079-5 | Equipment protection by powder filling "q" | 2 | 8 | 9 | 0 | 19 |
| IEC 60079-6 | Equipment protection by liquid immersion "o" | 0 | 0 | 0 | 0 | 0 |
| IEC 60079-7 | Equipment protection by increased safety "e" | 5 | 7 | 16 | 3 | 31 |
| IEC 60079-11 | Equipment protection by intrinsic safety "i" | 44 | 47 | 38 | 20 | 149 |
| IEC 60079-15 | Equipment protection by type of protection "n" | 19 | 17 | 13 | 5 | 54 |
| IEC 60079-18 | Equipment protection by encapsulation "m" | 5 | 6 | 21 | 5 | 37 |
| IEC 60079-25 | Intrinsically safe electrical systems | 0 | 0 | 0 | 0 | 0 |
| IEC 60079-26 | Equipment with Equipment Protection Level (EPL) Ga | 6 | 4 | 3 | 3 | 16 |
| IEC 60079-27 | Fieldbus intrinsically safe concept (FISCO) | 0 | 0 | 0 | 0 | 0 |
| IEC 60079-28 | Protection of equipment and transmission systems using optical radiation | 5 | 6 | 15 | 1 | 27 |
| IEC 60079-30-1 | Electrical resistance trace heating - General and testing requirements | 1 | 0 | 1 | 1 | 3 |
| IEC 60079-31 | Equipment dust ignition protection by enclosure "t" | 36 | 30 | 36 | 18 | 120 |
| IEC 60079-35-1 | Caplights for use in mines susceptible to firedamp - General requirements - Construction and testing in relation to the risk of explosion | 0 | 0 | 0 | 0 | 0 |
| IEC 61241-0 | General requirements | 0 | 0 | 0 | 0 | 0 |
| IEC 61241-1 | Protection by enclosures "tD" | 0 | 0 | 0 | 0 | 0 |
| IEC 61241-1-1 | Electrical apparatus protected by enclosures and surface temperature limitation - Specification for apparatus | 0 | 0 | 0 | 0 | 0 |
| IEC 61241-4 | Type of protection "pD" | 0 | 0 | 0 | 0 | 0 |
| IEC 61241-11 | Protection by intrinsic safety "iD" | 0 | 0 | 0 | 0 | 0 |
| IEC 61241-18 | Protection by encapsulation "mD" | 0 | 0 | 0 | 0 | 0 |
| IEC 62013-1 | General requirements - Construction and testing in relation to the risk of explosion | 0 | 0 | 0 | 0 | 0 |
| IEC 62086-1 | General and testing requirements | 0 | 0 | 0 | 0 | 0 |

**NOTE Above include certificates to IEC 60079-0 unless otherwise shown**

## National accreditation

IBExU has certification from SGS-International Certification Services for ISO 9001:2008 with certificate number DE06/3282. The scope includes safety testing and engineering services for explosion protection. The certificate is valid until September 2018.

IBExU has accreditation as a certification body from DAkkS (Deutsche Akkreditierungsstelle GmbH) to ISO/IEC 17065:2013 with the certificate number DAkkS D-ZE-17164-01-00 which is valid until 23 April 2022. The accreditation is generic for Ex and does not list any Ex standards. A copy of the accreditation is attached at Annex B.

NOTE The national accreditation is checked annually by the IECEx Secretariat.

## Assessment of manufacturers and issue of QARs

The assessment of manufacturers and issue of QARs is addressed in procedure “Verfahrensanweisung - Zertifizierungsverfahren nach IECEx Scheme” - “VA 09 7 001”

At the time of the assessment visit, there were out-of-date QARS shown on the IECEx online system. This was subsequently addressed, and IBExU were then able to demonstrate that there were no out-of-date QARS in the IECEx system.

## Comments (including issues found during assessment)

A number of issues were found during the assessment visit. Some of these have been referred to earlier in this report, but in summary are:

* Clarification on procedure for withdrawal of certificates
* Clarification on the appeals process regarding involvement of IECEx and provision of information on the process to the customer
* Clarification on the mechanism for ensuring impartiality
* Inclusion of unit verification in the procedures
* Inclusion of editions of standards in the application form
* Ensuring maintenance of QARs is up-to-date
* Meeting internal audit schedule
* Clarification on procedure for making the certification decision

All the above issues were resolved to the satisfaction of the assessment team.

# ExTL for IECEx Certified Equipment Scheme

## Assessment references

### General references

1. IECEx02 IECEx Certified Equipment Scheme covering equipment for use in explosive atmospheres – Rules of Procedure
2. IECEx OD003-2 Assessment, surveillance assessment and re-assessment of ExCBs and ExTLs operating in the IECEx 02, IECEx Certified Equipment Scheme
3. IECEx OD009 Issuing of CoCs, ExTRs and QARs
4. ISO/IEC 17025:2005 Edition 2, General requirements for the competence of testing and calibration laboratories
5. IECEx Technical Capability Document (TCD)
6. ExTAG decision sheets (DSs)

NOTE The latest editions of the above documents were applied.

### Additional references applied for this assessment

## ExTL persons interviewed

|  |  |
| --- | --- |
| Name | Position |
| D. Bauersfeld | Managing Director |
| K. Krumbiegel | Quality Management Representative / Auditor |
| J. Neuhauser | Auditor |
| B. Hille | Head of ExTL / Test engineer |
| M. Schwenke | Deputy head of ExTL / Test engineer |
| F. Gutte | Test engineer - non electrical equipment |
| F. Rauschenbach | Test engineer - non electrical equipment |
| J. Richter | Test engineer - electrical equipment |
| R. Dietrich | Technician |
| J. Sändig | Technician |

## Associated ExCB(s)

The ExTL is integral with the ExCB, ie the IBExU Institut für Sicherheitstechnik GmbH

## Organisation

### Names, titles and experience of the senior executives

|  |  |  |
| --- | --- | --- |
| Name | Title | Experience |
| D. Bauersfeld | Managing Director | 11 years in Ex, some previously in industry |
| B. Hille | Head of Electrical Department and Head of the ExTL | 35 years in Ex |
| M. Schwenke | Member of Electrical Department and Deputy Head of the ExTL | 4 years in Ex |

### Name, title and experience of the quality management representative

|  |  |  |
| --- | --- | --- |
| Name | Title | Experience |
| K. Krumbiegel | Quality Management Representative | 7 years in Ex / 11 years in quality |

### Other employees in ExTL activity

|  |  |  |
| --- | --- | --- |
| Name | Title/responsibility | Experience in Ex |
| P. Cimalla | Test engineer - electrical equipment | 1,5 years in Ex |
| F. Leuoth | Test engineer - electrical equipment | 5 years in Ex |
| U. Liebscher | Test engineer - non electrical equipment | > 7 years in Ex |
| J. Storch | Test engineer - electrical equipment | 2 years in Ex |
| J. Lucas | Test engineer - non electrical equipment | >> 7 years in Ex |
| C. Berndt | Test engineer - non electrical equipment | < 1 year in Ex |
| A. Bronsch | Test engineer - non electrical equipment | < 1 year in Ex |
| E. Franke | Test engineer - non electrical equipment | 3 years in Ex |
| T. Lange | Test engineer - non electrical equipment | 6 years in Ex |

## Organizational structure

The ExTL is integral with the ExCB as shown in the organisation chart in Annex A. Additional information is shown in the ExCB section of this report.

## Resources

The ExTL has the appropriate test facilities, procedures/test instructions and competent staff for the scope of work shown in this report.

The ExTL has a long experience of using EN 13463 Standards which are the forerunners for the ISO 80079-36+37 Standards.

## Test reports issued

The number of test reports (ExTRs) issued under for the preceding four years for each type of protection are shown in the table below.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Standard numbers | Type of protection or other identifying information | Number of issued reports (ExTRs) (for last 4 years) | | | | Total |
|  |  | 2014 | 2015 | 2016 | 2017 (until May 2017) |  |
| IEC 60079-0 | Equipment - General requirements | 12 | 18 | 34 | 9 | 73 |
| IEC 60079-1 | Equipment protection by flameproof enclosures "d" | 4 | 5 | 10 | 1 | 20 |
| IEC 60079-2 | Equipment protection by pressurized enclosure "p" | 0 | 0 | 0 | 0 | 0 |
| IEC 60079-5 | Equipment protection by powder filling "q" | 2 | 7 | 10 | 1 | 20 |
| IEC 60079-6 | Equipment protection by liquid immersion "o" | 0 | 0 | 0 | 0 | 0 |
| IEC 60079-7 | Equipment protection by increased safety "e" | 3 | 4 | 13 | 3 | 23 |
| IEC 60079-11 | Equipment protection by intrinsic safety "i" | 39 | 44 | 38 | 17 | 138 |
| IEC 60079-15 | Equipment protection by type of protection "n" | 19 | 16 | 12 | 4 | 51 |
| IEC 60079-18 | Equipment protection by encapsulation "m" | 5 | 6 | 20 | 5 | 36 |
| IEC 60079-25 | Intrinsically safe electrical systems | 0 | 0 | 0 | 0 | 0 |
| IEC 60079-26 | Equipment with Equipment Protection Level (EPL) Ga | 5 | 3 | 4 | 3 | 15 |
| IEC 60079-27 | Fieldbus intrinsically safe concept (FISCO) | 0 | 0 | 0 | 0 | 0 |
| IEC 60079-28 | Protection of equipment and transmission systems using optical radiation | 3 | 7 | 14 | 0 | 24 |
| IEC 60079-30-1 | Electrical resistance trace heating - General and testing requirements | 1 | 0 | 1 | 1 | 3 |
| IEC 60079-31 | Equipment dust ignition protection by enclosure "t" | 29 | 24 | 38 | 17 | 108 |
| IEC 60079-35-1 | Caplights for use in mines susceptible to firedamp - General requirements - Construction and testing in relation to the risk of explosion | 0 | 0 | 0 | 0 | 0 |
| IEC 61241-0 | General requirements | 0 | 0 | 0 | 0 | 0 |
| IEC 61241-1 | Protection by enclosures "tD" | 0 | 0 | 0 | 0 | 0 |
| IEC 61241-1-1 | Electrical apparatus protected by enclosures and surface temperature limitation - Specification for apparatus | 0 | 0 | 0 | 0 | 0 |
| IEC 61241-4 | Type of protection "pD" | 0 | 0 | 0 | 0 | 0 |
| IEC 61241-11 | Protection by intrinsic safety "iD" | 0 | 0 | 0 | 0 | 0 |
| IEC 61241-18 | Protection by encapsulation "mD" | 0 | 0 | 0 | 0 | 0 |
| IEC 62013-1 | General requirements - Construction and testing in relation to the risk of explosion | 0 | 0 | 0 | 0 | 0 |
| IEC 62086-1 | General and testing requirements | 0 | 0 | 0 | 0 | 0 |

**NOTE 1 Above include reports to IEC 60079-0 unless otherwise shown**

**NOTE 2 Where the number of reports is low, assessors are expected to carefully check current capability and document the process in this report.**

## National accreditation

IBExU has accreditation as a testing laboratory from DAkkS (Deutsche Akkreditierungsstelle GmbH) to ISO/IEC 17025 with certificate number D-PL-17164-01-00, valid to 27 April 2022. A copy of the accreditation is shown in Annex C.

The scope was provided in the DAkkS assessment document dated 27-04-2017. Some obsolete Standards in the IECEx list and some newer Standards in the IECEx list are not mentioned in the DakkS scope. For the scope extension the current standards were missing from this list:

* IEC/IEEE 60079-30-1
* ISO 80079-36
* ISO 80079-37

In addition, the following were at earlier editions in the DAkkS scope:

* ISO 16852 at Edition 1, not Edition 2.
* IEC 60079-28 at Edition 1, not Edition 2.

IBExU has indicated that they are seeking to have their accreditation scope expanded to address these standards.

At this stage they will require an annual Surveillance until all standards are covered by accreditation.

NOTE The national accreditation is checked annually by the IECEx Secretariat.

## Calibration

Calibration is addressed in procedure VA 11 5 001 addressing control of measurement devices. There is also a work instruction AA 11 5 001 which covers marking of all measurement devices. Calibration stickers show identification number and the calibration interval.

At present new thermocouples are calibrated externally. When an instrument comes back from calibration, the certificate is checked before the instrument is put back into service. There is a spreadsheet to keep track of all measurement devices. Reports can be generated from the spreadsheet to show instruments becoming due for calibration.

The calibration of the two environmental chambers was checked. The certificates showed calibration at 95 °C and 90 % RH, and sometimes wider range. This is acceptable.

The gas analysers are calibrated by a Wosthoff pump which is calibrated periodically by the manufacturer.

In general, the calibration system was found to be effective but with the following issues identified and subsequently addressed to the satisfaction of the assessment team:

* There was no record of periodic calibration of the spark test apparatus for intrinsic safety. This was resolved and included now in the calibration system for periodic calibration and checking.
* There was no evidence of compliance of the water nozzles with IEC 60529. Subsequently, new water nozzles were procured, calibrated and placed in the periodic calibration requirements of IBExU.

## Tests witnessed during the assessment visit

The following tests were witnessed during the assessment visit:

|  |  |  |  |
| --- | --- | --- | --- |
| Standard and edition | Clause number | Test | Comments |
| IEC 60079-1:2014 | 5 | Measurement of dimensions and flamepaths of flameproof enclosures | Satisfactory |
| IEC 60079-1:2014 | 15.2.2 | Flameproof pressure determination for a large enclosure | Satisfactory |
| IEC 60079-11:2011 | 10.1.4 | Use of spark test apparatus on a power supply | Satisfactory |
| ISO 80079-36:2016 | Annex D | Measurement of surface charge | Satisfactory |
| IEC 60079-18:2014 | 8.1.2 | Dielectric strength test on encapsulant | Satisfactory |
| IEC 60079-28:2015 | 5.2.2 | Tests for optical radiation - demonstration of optical power and irradiance for an Ex luminaire | Satisfactory |
| IEC 60079-0:2011 | 26.5.1.3 | Temperature rise of a luminaire | Satisfactory |
| IEC 60079-0:2011 | 26.4.5 | IP6X/5X test | Satisfactory |
| ISO 80079-37:2016 | 6.5 | Risk assessment of mechanical equipment using b technique | Satisfactory |
| ISO 16852-2008 | 6.8 | Testing of flame arrestor | Satisfactory |

## Participation in IECEx Proficiency Testing Programs

Program: PTB Ex PT Scheme

|  |  |  |
| --- | --- | --- |
| Year(s) of participation | IECEx Proficiency Testing program | General information about results |
| 2011-2012 | Program 1 "Explosion pressure" | Good results. |
| 2011-2012 | Program 2 "Spark ignition" | Satisfactory results. |
| 2013-2014 | Program 3 "Flame Transmission" | Good results. |
| 2013-2014 | Program 4 "Temperature Classification" | Good results. |
| 2015-2016 | Program 5 "Electrostatic Charge" | Satisfactory results. |
| 2015-2016 | Program 6 "Intrinsic Safety" | Satisfactory results |
| 2017- 2018 | Program 7 "Explosion pressure" | Still in progress |
| 2017- 2018 | Program 8 "Pressurized enclosure" | Still in progress |

## Comments (including issues found during assessment)

A number of issues were found during the assessment visit. Some of these have been referred to earlier in this report, but in summary are:

* Non-circulation of dust in the smaller dust chamber
* Blockage of holes in IPX4 spray head
* Calibration of IPX5 and X6 nozzles not available
* Greater than required number of test rounds being applied for the spark testing (three as opposed to one in the standard)
* Inadequate handling of sample for charge transfer test
* Lack of periodic checking of spark test apparatus
* Witness testing not in accordance with OD024

All the above issues were resolved to the satisfaction of the assessment team. In the case of the first dot point above, this chamber was removed from service, but there was a larger chamber that was found to have satisfactory circulation.

# Annexes

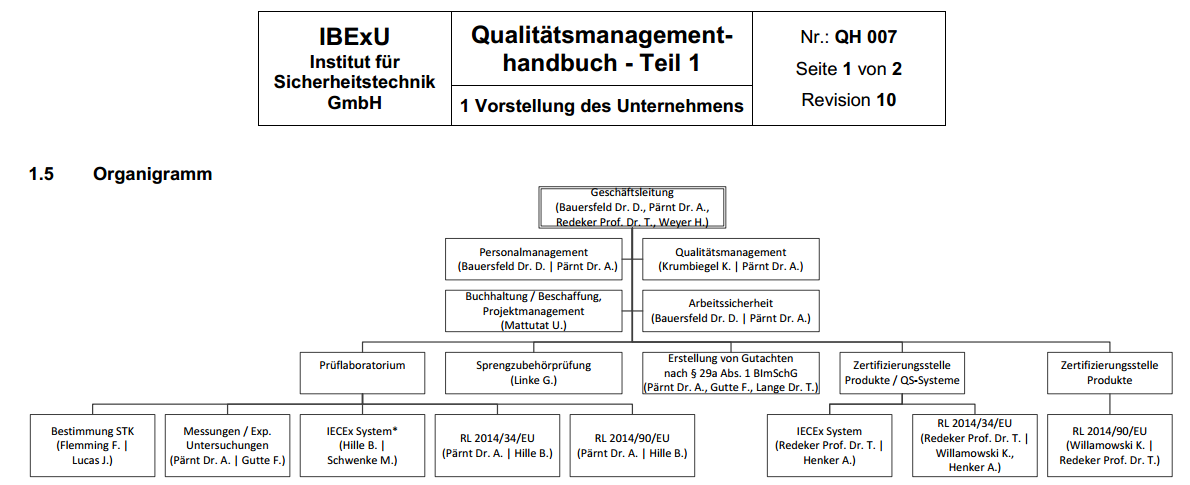
See Contents.

Annex A: Organisation Chart

Annex B: Accreditation Certificate for ISO/IEC 17065

Annex C: Accreditation Certificate for ISO/IEC 17025

1. Overall Organisation Chart



1. Accreditation Certificate for ISO/IEC 17065



1. Accreditation Certificate for ISO/IEC 17025

