

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

Circulation to: Ex Management Committee, ExMC

TITLE: IECEx Re-Assessment Report for the continued acceptance of, IBExU Institut für Sicherheitstechnik GmbH as an Accepted Ex Test Laboratory (ExTL) and an Extension of Scope to include the following Standard, IEC 60079-28.

INTRODUCTION

This document contains the IECEx scheduled 5 Year Re-assessment Report for IBExU, an Accepted IECEx Test Laboratory, (ExTL). During the re-assessment visit an assessment for an Extension of Scope to include IEC60079-28 was also carried out.

ExMC Members are asked to vote on the IECEx Assessment Team's recommendation for the scope extension of the Accepted ExTL, IBExU, to include the following Standards, IEC 60079-28 within their scope.

Please complete and return the voting form, a separate Word Document, for the scope extension to the Secretariat by –

2012 12 31

Your speedy response to the voting process will be very much appreciated. Contact details:

Chris Agius

IECEx Secretariat

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Australia	-



IECEX ASSESSMENT REPORT FOR IBEXU, Freiberg, Germany (IECEX TEST LABORATORY EXTL)

Type of Assessment: (please mark)

Initial assessment for Candidate ExTL

Re-Assessment of ExTL	Х
Scope Extension of ExTL	х

1. OBJECT AND FIELD OF APPLICATION

1.1. Country:

Germany

1.2. Name of ExTL

IBExU Institut für Sicherheitstechnik GmbH

1.3. Members of the Assessment Team

Heinz Berger – IECEx Officer - IECEx Lead Assessor David Walker – IECEx Expert Assessor

1.4. Place and Date of Assessment

IBExU Institut für Sicherheitstechnik GmbH Fuchsmühlenweg 7 09599 Freiberg Germany

May 21th - 23rd, 2012

1.5. Assessment References

- i) IECEx 02 Equipment Scheme Rules (current version)
- ii) IECEx OD 003 Assessment Procedures (current version)
- iii) IECEx OD 005-1, -2 and -3; Manufacturer Assessment (current version)
- iv) IEC 80079-34 Explosive atmospheres Part 34: Application of quality systems for equipment manufactures
- v) IECEx OD 009 Equipment Scheme Procedures (current version)
- vi) IECEx OD 18 Checklist 17025 (current version)
- vii) IECEx OD 24 Witness Testing/manufacturers and users Facility (current version)



- viii) ISO/IEC 17025:2005
- ix) IECEx Technical Guidance Documents (TGDs)
- x) ExTAG decision sheets (DSs)
- xi) OD's related to technical issues (if applicable)

1.6. Scope of Application

Number	Title	Acceptance
60079-0 Edition 5 Edition 6	Explosive atmospheres - Part 0: Equipment - General requirements	YES
60079-1 Edition 5 Edition 6	Explosive atmospheres - Part 1: Equipment protection by flameproof enclosures 'd'	YES
60079-2 Edition 4 Edition 5	Explosive atmospheres - Part 2: Equipment protection by pressurized enclosures 'p'	YES
60079-5 Edition 3	Explosive atmospheres - Part 5: Equipment protection by powder filling 'q'	YES
60079-6 Edition 2 Edition 3	Explosive atmospheres - Part 6: Equipment protection by oil immersion 'o'	YES
60079-7 Edition 3 Edition 4	Explosive atmospheres - Part 7: Equipment protection by increased safety 'e'	YES
60079-11 Edition 5 Edition 6	Explosive atmospheres - Part 11: Equipment protection by intrinsic safety 'i'	YES
60079-15 Edition 3 Edition 4	Explosive atmospheres - Part 15: Equipment protection by type of protection 'n'	YES
60079-18 Edition 2 Edition 3	Electrical apparatus for explosive gas atmospheres - Part 18: Construction, test and marking of type of protection encapsulation 'm' electrical apparatus	YES
60079-25 Edition 1 Edition 2	Explosive atmospheres - Part 25: Intrinsically safe systems	YES
60079-26 Edition 1 Edition 2	Explosive atmospheres - Part 26: Equipment with equipment protection level (EPL) Ga	YES
60079-27 Edition 1 Edition 2	Explosive atmospheres - Part 27: Fieldbus intrinsically safe concept (FISCO)	YES
60079-28 Edition 1	Explosive atmospheres - Part 28: Protection of equipment and transmission systems using optical radiation	YES Scope Extension



60079-30-1 Edition 1	Explosive atmospheres - Part 30-1: Electrical resistance trace heating - General and testing requirements	YES
60079-31 Edition 1	Explosive atmospheres - Part 31: Equipment dust ignition protection by enclosure "t"	YES
60079-35-1 Edition 1	Explosive atmospheres - Part 35-1: Cap lights for use in mines susceptible to firedamp - General requirements - Construction and testing in relation to the risk of explosion	YES
61241-0 Edition 1	Electrical apparatus for use in the presence of combustible dust - Part 0: General requirements	YES
61241-1 Edition 1	Electrical apparatus for use in the presence of combustible dust Part 1: Protection by enclosures 'tD'	YES
61241-4 Edition 1	Electrical apparatus for use in the presence of combustible dust Part 4: Type of protection 'pD'	YES
61241-11 Edition 1	Electrical apparatus for use in the presence of combustible dust Part 11: Protection by intrinsic safety 'iD'	YES
61241-18 Edition 1	Electrical apparatus for use in the presence of combustible dust Part 18: Protection by encapsulation 'mD'	YES
62013-1 Edition 2	Cap lights for use in mines susceptible to firedamp - Part 1: General requirements - Construction and testing in relation to the risk of explosion	YES
62086-1 Edition 1	Electrical resistance trace heating – Part 1: General and testing requirements	YES

1.7. ExTL Persons Interviewed

Name	Position
Burkhard Hille	DiplIng, (FH), Head of ExTL
Alexander Henker	DiplIng. (FH), Deputy Head of ExTL
Dr. H. Wagner	Dr. Ing.
Reimund Götze	Dipl. Ing.
Jens Richter	Dipl. Ing. (FH)
Rene Dietrich	Technician
Jens Sändig	Technician
Gerald Linke	Technical Worker

1.8. Legal Entity of the ExTL

IBExU is registered by the Amtsgericht Chemnitz (local court) under number HRB 8961 and last confirmed on 11th of June 2009. The document was presented during the assessment and found to meet the requirements of the IECEx.



1.9. Associated ExCB

The ExTL is integral with the ExCB:

IBExU Institut für Sicherheitstechnik GmbH Fuchsmühlenweg 7 09599 Freiberg (Saxony), Germany

1.10. Financial Support

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

1.11. History

Almost 84 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, Versuchsstrecke Freiberg)" was the "Staatshoheitrechtliche Institut der DDR" for the blasting essence, 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 proceed the scientific know how of the "IfB" and the work of the "Versuchsstrecke Freiberg" for the protection of human beings, real values as wells as the environment against the hazards generated by accidents.

IBExU developed into an European recognized institution for research, technical engineering services and safety tests in the special fields of plant- and processing engineering safety and accident prevention as well as protection against fire, explosions and emission.

The work of **IBExU** guarantees complete solutions in the mentioned subjects, even for very complex problems. The scientific and technical engineering staff of various special subjects has special professional experiences since many years. **IBExU** is affiliated as scientific institute to the Technische Universität Bergakademie Freiberg since 1995.

IBExU is accredited as Notified Body (identification number: 0637) in accordance with Directive 94/9/EC of the European Parliament and the Council of 23 March 1994 on the approximation of the laws of the member states concerning equipment and protective systems intended for use in potentially explosive atmospheres for the whole field of the explosion protection in the mining industry and the other industry.



IBExU has resources at an unique fund of scientific-technical knowledge and experiences on account of the management of the materials stored since the foundation of the "Versuchsstrecke Freiberg", such as R & D reports, expert s opinions and results of determinations of safety characteristics, certificates including all examination certificates issued in the former GDR.

Appropriate equipment in the laboratories and large-scale trial plants, such as explosion tanks or detonation pipes, in the open-air area are available for examinations and tests conforming to standards and quality.

2. ORGANISATION

2.1. Names, Titles and Experience of the Senior Executives

Name	Title	Experience
Prof. Dr. T. Redeker	CEO	53 years
Dr. A. Pärnt	CEO	34 years
B. Hille	DiplIng. (FH); Head of	31 years
	ExTL	-
A. Henker	DiplIng. (FH); Deputy Head	35 years
	of ExTL	

2.2. Name, Title and Experience of the Quality Management Representative

Name Title		Experience
Dr. A. Pärnt	Quality Manager	34 years / 29 years in Ex
K. Krumbiegel	Deputy Quality Manager	5 years / 2 years in Ex

2.3. Name and Title of Nominated Principal Contact

Name	Title	Comments
R. Götze	DiplIng.; Deputy Head Certification	iecex@ibexu.de

2.4. Employees

Name	Title	Experience in Ex (years)
Burkhard Hille	DiplIng. (FH)	31
Alexander Henker	DiplIng. (FH)	12
Reimund Götze	DiplIng.	15
Ulf Liebscher	DiplIng.	10
Jens Richter	DiplIng. (FH)	6
Dr. Holger Wagner	DrIng.	6
Friederike Flemming	DiplChem.	25
Rene Dietrich	Technician	10
Jens Sändig	Technician	6
Gerald Linke	Technical Worker	9
Timo Göhler	Technical Worker	15
Volker Wagner	Technical Worker	9
Erik Wollmann	Technical Worker	2



2.5. Organizational Structure

See ANNEXES 1 and 2 for the organizational structure of the IBExU ExTL.

3. RESOURCES

15 persons are involved in ExTL activities, supported by 2 persons in the administration.

4. DOCUMENTATION

4.1. Quality Manual

The QMS of IBExU consists of 5 levels:

- QH: Qualitätsmanagementhandbuch
- BA: Betriebsanweisungen
- VA: Verfahrensanweisungen
- AA: Arbeitsanweisungen
- FB: Formblätter

4.2. Procedures

Procedures can be found in part "AA". Several procedures concerning IECEx were checked during the assessment and found to meet the requirements of the IECEx.

4.3. Work Instructions

Work instructions can be found in part "AA". Several procedures concerning IECEx were checked during the assessment and found to meet the requirements of the IECEx.

4.4. Records

How to deal with records is described in VA 09 7 001, clause 4.3. The document was checked during the assessment and found to meet the requirements of the IECEx.

4.5. Document Change Control

Document change control is described in procedure QH 015. The document was checked during the assessment and found to meet the requirements of the IECEx.

4.6. Test Records

Test record sheets were checked and found to meet the requirements of the IECEx.



5. STATISTICS

5.1. Test Reports Issued

Number of **test reports** issued under the IECEx, ATEX or regional schemes in the preceding four years for each type of protection:

Standards	Title	Number of issued				
	1110		certificates			
		2008	2009	2010	2011 /12	Total
60079-0	Explosive atmospheres - Part 0: Equipment - General requirements					Part 0 included in numbers below
60079-1	Explosive atmospheres - Part 1: Equipment protection by flameproof enclosures 'd'	24	36	24	49	133
60079-2	Explosive atmospheres - Part 2: Equipment protection by pressurized enclosures 'p'	2	0	0	0	2
60079-5	Explosive atmospheres - Part 5: Equipment protection by powder filling 'q'	3	9	4	5	21
60079-6	Explosive atmospheres - Part 6: Equipment protection by oil immersion 'o'	0	0	0	0	0
60079-7	Explosive atmospheres - Part 7: Equipment protection by increased safety 'e'	31	31	29	20	111
60079-11	Explosive atmospheres - Part 11: Equipment protection by intrinsic safety 'i'	58	73	95	83	309
60079-15	Explosive atmospheres - Part 15: Equipment protection by type of protection 'n'	52	36	61	58	207
60079-18	Electrical apparatus for explosive gas atmospheres - Part 18: Construction, test and marking of type of protection encapsulation 'm' electrical apparatus	6	6	2	1	15
60079-25	Explosive atmospheres - Part 25: Intrinsically safe systems	0	0	1	2	3
60079-26	Explosive atmospheres - Part 26: Equipment with equipment protection level (EPL) Ga	11	15	20	13	59



Standards	Title	N	Number of issued			
		2008	2009	2010	2011 /12	Total
60079-27	Explosive atmospheres - Part 27: Fieldbus intrinsically safe concept (FISCO)	0	0	0	0	0
60079-28	Explosive atmospheres - Part 28: Protection of equipment and transmission systems using optical radiation	4	5	4	5	18
60079-30-1	Explosive atmospheres - Part 30-1: Electrical resistance trace heating - General and testing requirements	0	0	0	0	0
60079-31	Explosive atmospheres - Part 31: Equipment dust ignition protection by enclosure "t"	0	2	22	37	61
60079-35-1	Explosive atmospheres - Part 35-1: Cap lights for use in mines susceptible to firedamp - General requirements - Construction and testing in relation to the risk of explosion					-
61241-0	Electrical apparatus for use in the presence of combustible dust - Part 0: General requirements					Part 0 included in numbers below
61241-1	Electrical apparatus for use in the presence of combustible dust - Part 1: Protection by enclosures 'tD'	16	27	6	0	49
61241-4	Electrical apparatus for use in the presence of combustible dust - Part 4: Type of protection 'pD'	0	0	0	0	0
61241-11	Electrical apparatus for use in the presence of combustible dust - Part 11: Protection by intrinsic safety 'iD'	13	22	25	17	77
61241-18	Electrical apparatus for use in the presence of combustible dust - Part 18: Protection by encapsulation 'mD'	0	0	0	0	0
62013-1	Cap lights for use in mines susceptible to firedamp - Part 1: General requirements - Construction and testing in relation to the risk of explosion	0	0	0	0	0
62086-1	Electrical resistance trace heating – Part 1: General and testing requirements	0	0	0	0	0

6. CALIBRATION

IBExU maintains a calibration data base which is under the control of the quality manager. The equipment requiring recalibration is clearly identified. The data base as well as the recalibration process was checked during the assessment and found to meet the requirements of the IECEx.

7. CONFIDENTIALITY

All confidentiality declarations of IBExU employees active in the IECEx Scheme were checked during the assessment and found to meet the requirements of the IECEx.

8. NATIONAL ACCREDITATION

IBExU holds an accreditation from DAkkS for ISO/IEC 17025. The number is D-PL-17164-01-00, was issued on April 27th, 2012 and is valid until April 26th, 2017. The scope of standards according to IECEx is fully covered with this certificate. The DAkkS accreditation report was presented during the assessment as well as the documentation of the resolving process of open issues. See ANNEX 3 of this report.

9. RECOGNITION AND AGREEMENTS

At present, no recognitions and agreement outside of the IECEx System are in force, except for subcontracting mentioned in the IECEx list of subcontractors, see ExMC/810/DV for details.

10. INTERNAL AUDIT AND PERIODIC MANAGEMENT REVIEW

Internal audits are described in procedures QH 029 and VA 17 5 001. The internal audit process was checked in detail during the assessment and found to meet the requirements of the IECEx.

11. COMPLAINTS AND APPEALS (Including appeals to IECEx)

The complaint and appeal procedures are described in QH part 3, VA 097 001, clause 4.3, AA 13 5 001 and FB 13 5 801. The procedures were checked during the assessment and found to meet the requirements of the IECEx.

12. SPECIAL FACTS TO BE NOTED

12.1. Supporting Documentation

Copies of additional supporting information for this assessment have been provided to the audited organization and the IECEx Secretariat. These include:

- Details of issues raised and how these have been resolved
- Checklist for ISO/IEC 17025



- Completed technical guidance notes (TGDs)
- Photos of the facilities

12.2. Tests Witnessed and/or competence checked

IEC 60079-0 General Requirements

- 26.4.5 Degree of protection (IP) by enclosures dust test
- 26.4.5 Degree of protection (IP) by enclosures water test
- 26.8 Thermal endurance to heat
- 26.13 Surface resistance test of parts of parts of enclosures of non-metallic materials
- 26.14 Charging tests
- 26.15 Measurement of capacitance

IEC 60079-1 Flameproof 'd'

- 5 Flameproof joints
- 15.2 Test for non-transmission of an internal ignition

IEC 60079-7 Increased safety "e"

6.1 Dielectric Tests

IEC 60079-11 Intrinsic Safety "i"

- 10.1 Spark Testing
- 10.3 Dielectric Strength Tests

Assessments according to the requirements of all TGDs was conducted for all other tests and assessment requirements of Standards was conducted with the assessment team finding that there was adequate test equipment available and in good condition with testing staff demonstrating a good understanding of the requirements of Standards.

13. COMMENTS (Including issues found during assessment)

During the assessment issues were found in the area of theof drawings, test procedures, test plans, control of standards. All issues raised were resolved to the satisfaction of the IECEx assessment team as meeting IECEx requirements.

14. **RECOMMENDATION**

Based on the re-assessment performed from May 21th to 23rd, 2012, the ExTL of IBExU is recommended for continued acceptance in the IECEx scheme as a IECEx Testing Laboratory (ExTL) according to the scope of the standards listed in this document and recommend scope extension to cover IEC 60079-28.

Lead Assessor Heinz Berger Expert Assessor David Walker



List of Annexes:

- Overall Organization Chart of IBExU
 Organization Chart of ExTL of IBExU
 Accreditation Certificate from DAkkS for the ExTL according to ISO/IEC 17025





ANNEX 1: Overall Organization Chart of IBExU





ANNEX 2: Organization Chart of ExTL of IBExU



ANNEX 3: Accreditation Certificate from DAkkS for the ExTL according to ISO/IEC 17025



Deutsche Akkreditierungsstelle GmbH

Beliehene gemäß § 8 Absatz 1 AkkStelleG i.V.m. § 1 Absatz 1 AkkStelleGBV Unterzeichnerin der Multilateralen Abkommen von EA, ILAC und IAF zur gegenseitigen Anerkennung





Die Deutsche Akkreditierungsstelle GmbH bestätigt hiermit, dass das Prüflaboratorium

IBExU Institut für Sicherheitstechnik GmbH Fuchsmühlenweg 7, 09599 Freiberg

die Kompetenz nach DIN EN ISO/IEC 17025:2005 besitzt, Prüfungen in folgenden Bereichen durchzuführen:

Geräte, Schutzsysteme und Komponenten zur bestimmungsgemäßen Verwendung in explosionsgefährdeten Bereichen sowie Sicherheits-, Kontroll- und Regelvorrichtungen für den Einsatz außerhalb von explosionsgefährdeten Bereichen gemäß RL 94/9/EG und den in der Anlage aufgeführten Normen

Die Akkreditierungsurkunde gilt nur in Verbindung mit dem Bescheid vom 27.04.2012 mit der Akkreditierungsnummer D-PL-17164-01 und ist gültig bis 26.04.2017. Sie besteht aus diesem Deckblatt, der Rückseite des Deckblatts und der folgenden Anlage mit insgesamt 8 Seiten.

Registrierungsnummer der Urkunde: D-PL-17164-01-00

lm Auftrag Dr. Heike Manke Abteilungsleiterin

Berlin, 27.04.2012