



EXMC/1098/DV
March 2016

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

Title: Re-assessment and Scope Extension Report for China National Quality Supervision & Test Centre for Explosion-proof / Safety Products for Coal Mines (CMExC), an Accepted ExTL within the IECEx System, Equipment Scheme 02

To: Members of the IECEx Management Committee, ExMC

Introduction

This document contains the IECEx Re-Assessment Report for China National Quality Supervision & Test Centre for Explosion-proof / Safety Products for Coal Mines (CMExC) an Accepted ExTL within the IECEx System, Equipment Scheme 02

During the re-assessment, the IECEx Assessment Team took the opportunity to also assess China National Quality Supervision & Test Centre for Explosion-proof / Safety Products for Coal Mines (CMExC) facilities, equipment and competence to undertake testing and certification to the Standards –

IEC 60079-2 Part 2: Equipment protection by pressurized enclosures 'p'
IEC 60079-5 Part 5: Powder filling 'q'
IEC 60079-6 Part 6: Powder filling 'q'
IEC 60079-26 Part 26: Equipment with equipment protection level (EPL) Ga
IEC/IEEE 60079-30-1 Part 30-1: Electrical resistance trace heating – General and testing
IEC 61241-4 Part 4: Type of protection 'pD'
IEC 61241-18 Part 18: Protection by encapsulation 'mD'
IEC 62086-1 Electrical resistance trace heating – Part 1: General and testing requirements

Please consider the assessment report and return the completed voting form, (A separate Word document) to [the Secretariat](#) by

2016 05 05

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

Chris Agius

IECEx Secretariat

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IECEX ASSESSMENT REPORT FOR China National Quality Supervision & Test Centre for Explosion-proof / Safety Products for Coal Mines (CMExC), No.11, BinHe Road, Economic Development Zone, Fushun 113122,P.R. of China (IECEX TL)

Type of Assessment: (please mark)

Initial assessment for Candidate ExTL

Re-Assessment of ExTL X

Scope Extension of ExTL X

1. OBJECT AND FIELD OF APPLICATION

1.1. Country:

P.R. of China

1.2. Name of ExTL

China National Quality Supervision & Test Centre for Explosion-proof / Safety Products for Coal Mines (CMExC)

1.3. Members of the Assessment Team

Heinz Berger – IECEx Lead Assessor
Gordana Ostojic – IECEx Expert Assessor

*The above Team was part of an overall IECEx Assessment team comprising:
Heinz Berger – Team Leader
Gordana Ostojic - Expert Assessor
Ajay Maira – Expert Assessor
Michel Brenon – Expert Assessor*

This Assessment formed part of the overall assessment of all IECEx CN Bodies, including: CQM, CQST, NEPSI, PCEC, and CHEM (Mid-term only). Results of these individual assessments are included in separate ExMC reports, as posted to the Members area of the IECEx Website.

1.4. Place and Date of Assessment

**CMExC, No.11, BinHe Road, Economic Development Zone, Fushun 113122
P.R. of China**

June 11th & 12th, 2015

1.5. Assessment References

- i) IECEx 02 Equipment Scheme Rules (current version)



- ii) IECEx OD 003-2 Assessment Procedures (current version)
- iii) IEC/IEC 80079-34 Manufacturer Assessment (current version)
- iv) IECEx OD 009 Equipment Scheme Procedures(current version)
- v) IECEx OD 18 Checklist 17025 (current version)
- vi) IECEx OD 024 Witness Testing/manufacturer and users Facility
- vii) ISO/IEC 17025:2005
- viii) IECEx Technical Capability Document (TCD)
- ix) ExTAG decision sheets (DSs)
- x) OD's related to technical issues
- xi) ExTL scope extension application documents, February 4th, 2015

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 6 Edition 7	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 Scope extension
60079-5 Edition 2 Edition 3	Explosive atmospheres - Part 5: Equipment protection by powder filling 'q'	YES Scope extension
60079-6 Edition 2 Edition 3	Explosive atmospheres - Part 6: Equipment protection by oil immersion 'o'	YES Scope extension
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 3 Edition 4	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



Number	Title	Acceptance
60079-26 Edition 2 Edition 3	Explosive atmospheres - Part 26: Equipment with equipment protection level (EPL) Ga	YES Scope extension
60079-27 Edition 1 Edition 2	Explosive atmospheres - Part 27: Fieldbus intrinsically safe concept (FISCO)	YES
IEC/IEEE 60079-30-1 Edition 1	Explosive atmospheres - Part 30-1: Electrical resistance trace heating - General and testing requirements	YES Scope extension
60079-31 Edition 1 Edition 2	Explosive atmosphere – Part 31: Equipment dust ignition protection by enclosure “t”	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 Scope extension
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 Scope extension
62086-1 Edition 1	Electrical apparatus for explosive gas atmospheres – Electrical resistance trace heating – Part 1: General and testing requirements	YES Scope extension

Note: All gas standards are for Group II only, where relevant.

1.7. Candidate TL Persons Interviewed

Name	Position
Luo Haizhu	Director of CMExC
Liu Chunfu	Executive Vice Director
Dong Chunhai	Vice Director, Technical Director
Zhu Shian	Vice Director, Quality Manager
Zhang Hongfu	Vice Director
Fu Shuling	Vice Director
Yang Guangyu	Director of Flame-proof Department



Name	Position
Liu Yongming	Vice Director of Flame-proof Department
Shi Lei	Vice Director of Flame-proof Department
Li Bing	Vice Director of Flame-proof Department
Wang Hui	Chief Engineer of Flame-proof Department
Ma Long	Director of Safety Instrument Department
Li Zhe	Vice Director of Safety Instrument Department
Li Zhongqiang	Vice Director of Safety Instrument Department
Wu Beiping	Vice Director of Technical Department
Zhang Wanzhe	Director of Electrical Equipment Department
Liu Xiping	Director of Cable Department
Chen Jun	Manager Apparatus and Standards
Zuo Hang	Manager Document Control
Lin Na	Testing person
Ren Nan	Testing person
Zhang Weibin	Testing person
Chen Fandong	Testing person
Zhang Yan	Testing person
Shi Ruotong	Testing person
Huang Xuanzhe	Testing person
Li Zhenxi	Testing person
Ju Zhe	Testing person
Wang Dong	Testing person

1.8. Legal Entity of The Candidate TL

CMExC is an independent enterprise recognized by Chinese National Authorities since May 19, 2000. Mother body is Shenyang Research Institute (SYCCTEG). The legal entity number is 210400000026129. The validity is not limited. The document was presented during the assessment and found to meet the requirements of the IECEX.

1.9. Associated ExCB

China Quality Mark Certification Group Co., Ltd (CQM)

No.33 Zengguang Road,
Haidian District,
Beijing City,
Postal Code:100048 PR of China

The contract is being renewed every year. The last contract was signed on July 23rd, 2014. Changes from the re-assessment will be taken into account with the next version. The contract was reviewed during the assessment and found to meet the requirements of the IECEX.

1.10. Financial Support

CMExC has its income from testing activities.



1.11. History

CMExC is a large comprehensive quality supervision and inspection body on state level and chiefly undertakes inspections/tests of mining equipment. The history of CMExC may trace back to 1950's. In 1987 CMExC passed the metrology certification and audit of the State Certification and Supervision Administrative Committee, and was authorized as a state level product quality supervision and test body. In 1993 CMExC passed the re-assessment of the metrology certification. In 1998 CMExC passed the audit for metrology certification of the State Coal Industry Ministry. In 2003 CMExC passed the assessment of coalmine equipment test and inspection, authorized by the State Administration of Work Safety and the State Administration of Coal Mine Safety. In 2005 CMExC passed the initial assessment of IECEX and became one of the explosion-proof laboratories of the P.R. of China of the IECEX System.

2. ORGANISATION

2.1. Names, Titles and Experience of the Senior Executives

Name	Title	Experience
Luo Haizhu	Director	30years 3years director of CMExC 17 years for science and technology research work in FSCCRI 10 years Director of a re-search institute
Liu Chunfu	Executive Vice Director	29 years 7 years for inspector in CMExC 8 years for Ex equipment's design and production 14 years for Vice Director
Dong Chunhai	Vice Director, Technical director	30 years 9 years for inspector in CMExC 10 years for manager in CMExC 11 years for Vice Director
Zhu Shian	Vice Director, Quality Manager	19 years 7 years for inspector of intrinsic safety instruments 12 years for Vice Director
Zhang Hongfu	Vice Director	22 years 9 years for inspector in CMExC 11 years for science and technology research work in CMExC 2 years for Vice Director



Name	Title	Experience
Yang Guangyu	Director of Flame-proof Department	19 years 10 years for inspector of Flame-proof and Electrical production. 5 years for vice director of Electrical Department 4 years for manager of Flame-proof Department
Fu Shuling	Chief Engineer of CMExC	33 years 5 years for inspector of intrinsic safety instruments 20 years for vice director of Flame-proof Department 8 years for director of Safety Instrument Department
Zhang Wanzhe	Director of Electrical Equipment Department	29 years 5 years for inspector of Flame-proof and Electrical production. 10 years for science and technology research work in CMExC 9 years for vice director of Electrical Equipment Department 5 years for director of Electrical Equipment Department

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

Name	Title	Experience in Ex
Zhu Shian	Vice Director, Quality Manager	19 years 7 years for inspector of intrinsic safety products 12 years for Vice Director and Quality Manager
Dong Chunhai	Vice Director, Technical director	21 years 10 years for manager in CMExC and Quality Manager 11 years for Vice Director
Liu Chunfu	Executive Vice Director	24 years 7 years for inspector in CMExC 8 years for Ex equipment's design and production 8 years for Executive Vice Director



2.3. Name and Title of Nominated Principal Contact

Name	Title	Comments
Zhu Shian	Vice Director ,Quality Manager	zhushianabc@sina.com

2.4 Employees (overall list)

Name	Title	Experience in Ex
Luo Haizhu	Director	4 years
Liu Chunfu	Executive Vice Director	24 years
Dong Chunhai	Vice Director, Technical director	21 years
Zhu Shian	Vice Director ,Quality manager	19 years
Zhang Hongfu	Vice Director	22 years
Yang Guangyu	Director of Flame-proof Department	19 years
Fu Shuling	Chief Engineer of CMExC	33 years
Fan Guang	Vice Director of Flame-proof Department	36 years
Liu Yongming	Vice Director of Flame-proof Department	11years
Shi Lei	Vice Director of Flame-proof Department	14 years
Li Bing	Vice Director of Flame-proof Department	8 years
Wang Hui	Chief Engineer of Flame-proof Department	14 years
Kang Liying	Testing person	13 years
Ren Nan	Testing person	13 years
Li Zhenxi	Testing person	7 years
Lin Na	Testing person	14 years
Feng Ligu	Testing person	11 years
Wang Zhan	Testing person	26 years
Tu Zhiyu	Testing person	36 years
Wen Luchun	Testing person	8 years
Geng Yanbo	Testing person	13 years
Zhang Weibin	Testing person	6 years
Ju Zhe	Testing person	6 years
Shi Ruotong	Testing person	2 years
Huang Xuanzhe	Testing person	2 years
Li Tongzhe	Testing person	4 years
Chen Fandong	Testing person	4 years
Ma Long	Director of Safety Instrument Department	4 years
Li Zhe	Testing person	14 years



Name	Title	Experience in Ex
Li Zhongqiang	Testing person	9 years
Zhang Yan	Testing person	12 years
Liu Yajun	Testing person	2 years
Pan Yanan	Testing person	10 years
Wang Dong	Testing person	7 years
Ha Xun	Testing person	30 years
Zhang Fang	Testing person	23 years
Zhang Wangzhe	Director of Electrical Equipment Department	31 years
Liu Xiping	Director of Cable Test Department	10 years
Chen Jun	Calibration & Equipment Management Clerk	19 years
Zuo Hang	File Management Clerk	10 years
Wang Yukun	Testing person	7 years
Wang Shuai	Testing person	8 years
Tong Dejun	Testing person	13 years
Zhang Hongkui	Testing person	3 years

2.4. Organizational Structure

See ANNEX 1a and 1b for the organization charts of CMExC.

3. RESOURCES

The total number of personnel in the Ex Test Department is 44. The testing area is 33000m². The laboratories are in good condition and well equipped to meet the requirements for Ex testing. CMExC is well resourced with experienced staff and a comprehensive management system.

The electrical power distribution system is appropriate for the scope of recognition according to ISO/IEC 17025:2005, sub-clause 5.3.

When not otherwise specified in the testing standard, laboratory power sources used for testing meet the following criteria at the point where testing is performed under both loaded and no-load conditions :	
Voltage stability: +/- 3 percent maximum	<input checked="" type="checkbox"/>
Frequency stability: +/- 2 percent maximum	<input checked="" type="checkbox"/>
Total harmonic distortion: maximum 5 percent	<input checked="" type="checkbox"/>

4. DOCUMENTATION

4.1. Quality Manual

The Quality Manual consists of 4 levels:



Level 1: Quality Manual	(FFA10000 series)
Level 2: Procedures	(FFA20000 series)
Level 3: Operational Documents	(FFA30000 series)
Level 4: Forms	(FFA40000 series)

The first versions were issued on October 1st, 2011), the latest versions on May 5th, 2015.

Procedure FFA23034 describes the operation of IECEx in Chinese language. The quality manual, several procedures, operational documents and forms were reviewed during the assessment and found to meet the requirements of the IECEx.

4.2. Procedures

There are presently 49 procedures. Their numbering begins with FFA2. Several procedures were checked during the assessment and found to meet the requirements of the IECEx.

4.3. Work Instructions

There are presently 164 work instructions for use with IECEx activities to cover IEC standards in the IECEx scope. Their numbering begins with FFA3. Several work instructions were used during the witness testing and found to meet the requirements of the IECEx.

4.4. Records

There are presently 168 documents concerning records for use with the IECEx scheme. Their numbering begins with FFA4. A number of the documents were checked during the assessment and found to meet the requirements of the IECEx.

4.5. Document Change Control

Document change control is described in document FFA23003 and FFA23034 (IECEx specific). The documents were checked during the assessment and found to meet the requirements of the IECEx.

4.6. Test Records

Test records are described in document FFA23010 and FFA23034 (IECEx specific). They are carefully prepared and stored for at least 10 years. CMExC has established an archive and a full time archivist. The archive is secured by limited access and a fire protection system. The procedures were reviewed and found to meet the requirements of the IECEx.

5. TEST REPORTS

5.1. Test Reports Issued



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

Standards	Title	Number of issued test reports ^{1, 2}					Total
		2012	2013	2014	2015		
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'	0 (IEC) 2045 (GB)	0 (IEC) 1782 (GB)	5 (IEC) 1391 (GB)	0 (IEC) 424 (GB)		5647
60079-7	Explosive atmospheres - Part 7: Equipment protection by increased safety 'e'	0 (IEC) 3 (GB)	0 (IEC) 1 (GB)	4 (IEC) 6 (GB)	---		14
60079-11	Explosive atmospheres – Part 11: Equipment protection by intrinsic safety 'i'	0 (IEC) 1946 (GB)	0 (IEC) 2700 (GB)	0 (IEC) 2170 (GB)	0 (IEC) 678 (GB)		7494
60079-15	Explosive atmospheres - Part 15: Equipment protection by type of protection 'n'	---	---	---	---		0
60079-18	Electrical apparatus for explosive gas atmospheres - Part 18: Construction, test and marking of type of protection encapsulation 'm' electrical apparatus	0 (IEC) 12 (GB)	0 (IEC) 8 (GB)	0 (IEC) 14 (GB)	---		34
60079-25	Explosive atmospheres - Part 25: Intrinsically safe systems	---	---	---	---		0
60079-26	Explosive atmospheres - Part 26: Equipment with equipment protection level (EPL) Ga	---	---	---	---		0
60079-27	Explosive atmospheres - Part 27: Fieldbus intrinsically safe concept (FISCO)	---	---	---	---		0
61241-0	Electrical apparatus for use in the presence of combustibile dust – Part 0: General requirements	---	---	---			Part 0 included in numbers below
60079-31	Explosive atmosphere – Part 31: Equipment dust ignition protection by enclosure “t”	---	---	---	---		0
61241-1	Electrical apparatus for use in the presence of combustibile dust -Part 1: Protection by enclosures 'tD'	---	---	---	---		0



Standards	Title	Number of issued test reports ^{1, 2}				
		2012	2013	2014	2015	Total
61241-11	Electrical apparatus for use in the presence of combustible dust -Part 11: Protection by intrinsic safety 'iD'	---	---	---	---	0
62086-1	Electrical apparatus for explosive gas atmospheres – Electrical resistance trace heating – Part 1: General and testing requirements	---	---	---	---	0

Note 1: GB stands for Chinese Standards

Note 2: CMExC is mainly active in Group I as this body is the largest organization in the P.R. of China dealing with mining.

6. CALIBRATION

The procedure for test and calibration is described in Procedure Document FFA 23022-2011. Calibration is handled by an employee dedicated to this activity. The equipment is listed on forms (FFA43054) showing all relevant information. The procedure and the calibration plan were checked during the assessment and found to meet the requirements of the IECEx. Several original calibration certificates were reviewed and found to meet the requirements of the IECEx.

7. CONFIDENTIALITY

Procedure Document FFA23001-2011 "Procedure for to ensure the protection information and proprietary rights of the client" of the Quality System Document is dealing with the confidentiality issue. Confidentiality agreements are renewed every year. The signed confidentiality agreements were checked and found to meet the requirements of the IECEx.

8. NATIONAL ACCREDITATION

CMExC holds accreditation granted by the Chinese National Accreditation Service for Conformity Assessment (CNAS) under number L 1335. At the time of the IECEx re-assessment, the certificate showed validity until May 13th, 2018. The accreditation covers all standards in the IECEx scope including the standards listed for scope extension. Beside the Chinese standards (GBs) all relevant IEC standards are listed in the accreditation schedule as well. See **ANNEX 2** for the certificate.

9. RECOGNITION AND AGREEMENTS

There are presently no such agreements outside those of the IECEx, e.g. CQM as ExCB.



10. INTERNAL AUDIT AND PERIODIC REVIEW

Internal audits are described in document FFA23011. They are performed 1 to 2 times a year. The audit plan for 2015 was reviewed. The 2015 internal audits will be performed in August 2015. The audit reports from 2014 were reviewed, including the resolution process of issues. The requirements of the IECEx are met.

Periodic reviews are described in document FFA23012. Management reviews are performed once a year. The last management review was held on January 27th, 2015. The latest minutes were partially checked and found to meet the requirements of the IECEx. Management reviews are normally performed in January.

11. COMPLAINTS AND APPEALS (Including appeals to IECEx)

Quality Manual and Procedure Document FFA23006-2011 are dealing with complaints issue. The procedure was checked and found to meet the requirements of the IECEx. There are no complaints and appeals concerning 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:

- On-Site Assessment report (IECEx OD 006)
- Details of issues raised and how these have been resolved
- Checklist for ISO/IEC 17025
- IECEx Technical Capability Document (TCDs)
- Photos of facilities and equipment
- List of Subcontractors and Contractors
- Competence Matrix

12.2. **Tests Witnessed and competence checked**

1. Earth continuity test - clause 26.12 of IEC 60079-0
2. Dust ingress protection IP6X - Standard IEC 60079-0 Clause 26.4.5 (IEC 60529)
3. Determination of an explosion pressure (reference pressure) in a flameproof motor Ex d - Standard IEC 60079-1 Clause 15.1.2
4. Use of spark ignition apparatus - Standard IEC 60079-11 Clause 10.1
5. Short circuit and temperature rise of a battery as required by IEC 60079-11 - Standard IEC 60079-11 Clause 10.5.3
6. General purpose connection and junction boxes – clause 6.7 of IEC 60079-7



7. Verification of rated output, 60079-30-1, clause 5.1.10
8. Overpressure test 60079-2, clause 16.1

All tests mentioned above could be completed and, where required, issues raised. They all were resolved to the satisfaction of the assessment team (see also clause 13 for further comments).

13. COMMENTS (Including issues found during assessment)

Ms. Sandy Huang was representing CQM during the whole assessment.

During the assessment issues were found in the area of temperature rise tests, IP test, mechanical properties on drawings and dust test. All issues were resolved to the satisfaction of the assessment team.

14. RECOMMENDATION

Based on the re-assessment performed from June 11th & 12th, 2015, the testing laboratory of CMExC is recommended for continued acceptance in the IECEx Scheme as an IECEx Testing Laboratory (ExTL) according to the scope of the standards listed in this document including scope extensions.

Lead Assessor
Heinz Berger

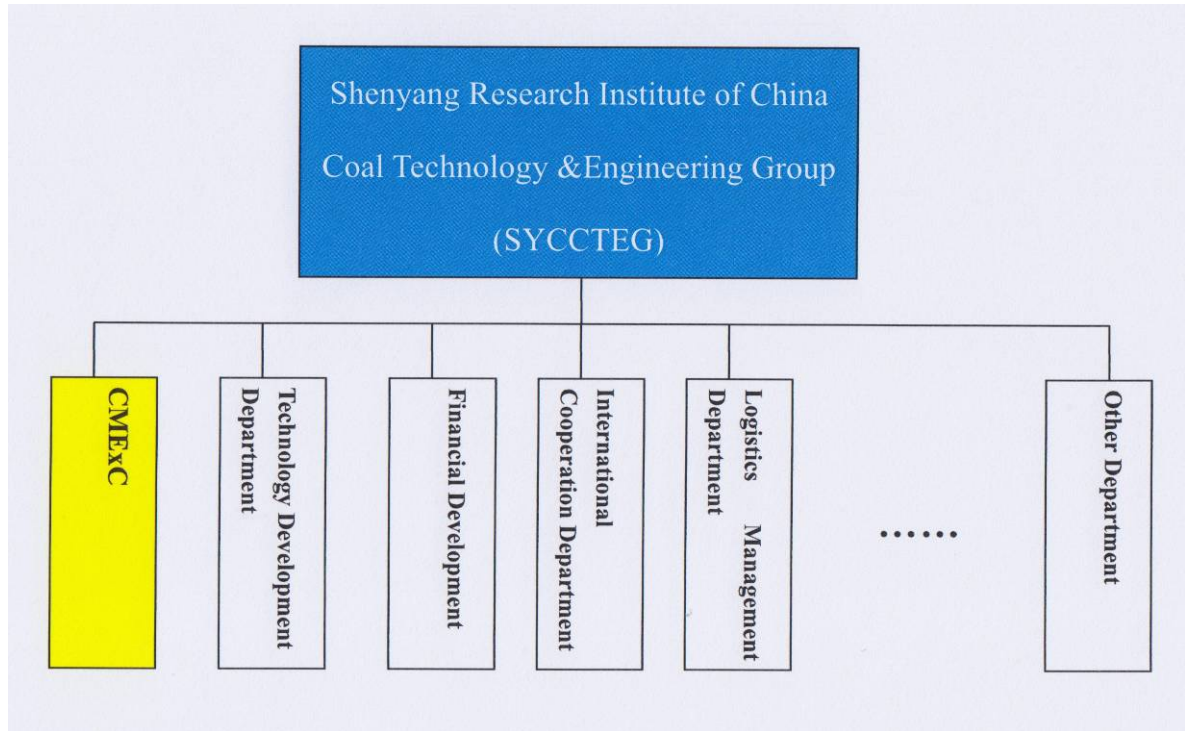
Expert Assessor
Gordana Ostojic

Date: June 12th, 2015

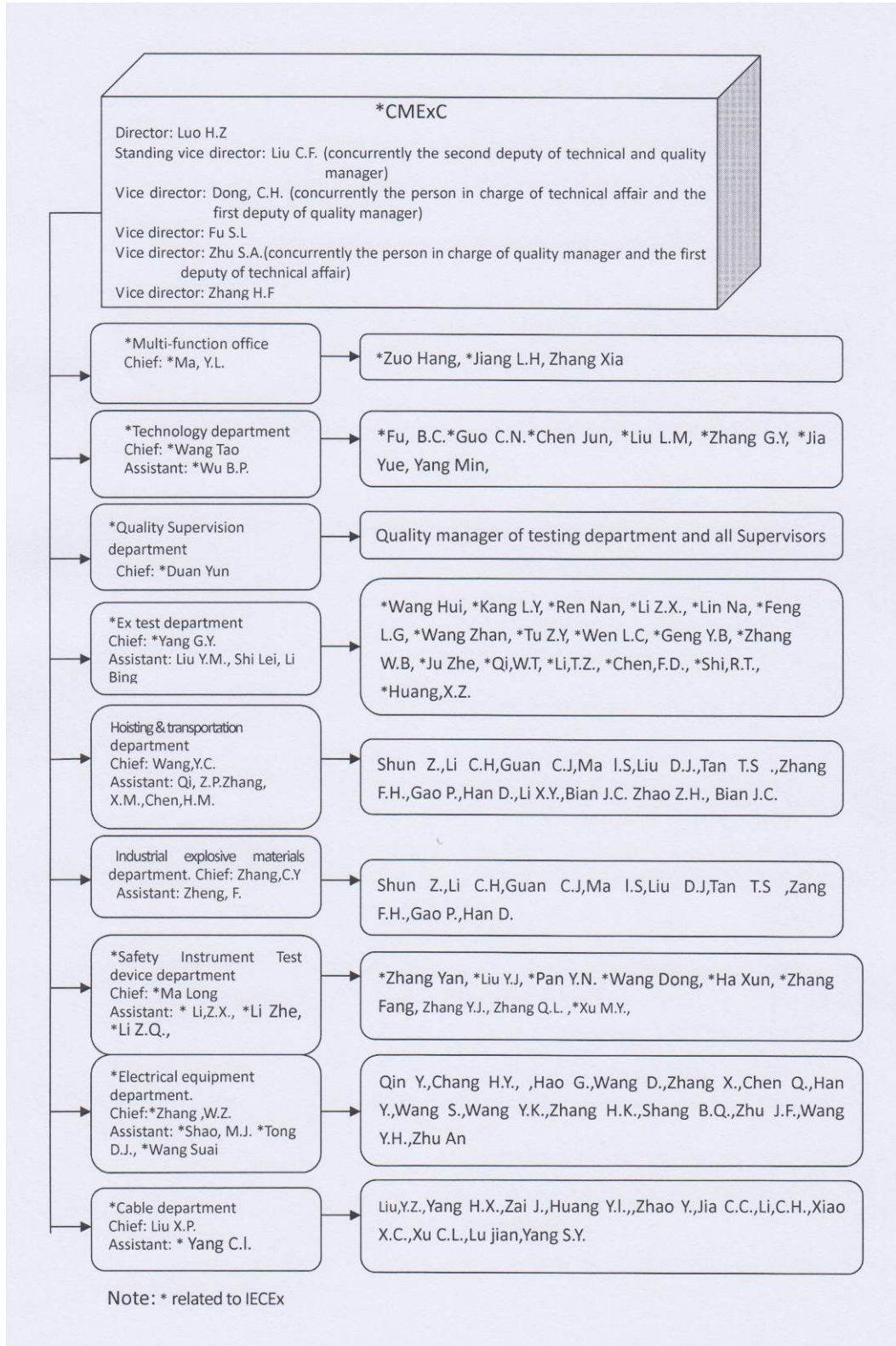
List of Annexes:

- ANNEX 1a: Overall Organization Chart
- ANNEX 1b: Organization Chart of CMExC
- ANNEX 2: Accreditation Certificate from CNAS according to ISO/IEC 17025

ANNEX 1a: Overall Organization Chart



Annex 1b: Organization Chart of CMExC





EXMC/1098/DV
March 2016

ANNEX 2: Accreditation Certificate according to ISO/IEC 17025



China National Accreditation Service for Conformity Assessment

LABORATORY ACCREDITATION CERTIFICATE

(Registration No. CNAS L1335)

**Explosion-Proof & Safety Products(Testing) Laboratory,
CCTEG Shenyang Research Institute**

No.11, Binhe Road, Fushun Economic Development Zone, Liaoning, China

is accredited to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration Laboratories(CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence of testing.

The scope of accreditation is detailed in the attached appendices bearing the same registration number as above. The appendices form an integral part of this certificate.

Date of Issue: 2015-05-14

Date of Expiry: 2018-05-13

Date of Initial Accreditation: 1998-11-09

Signed on behalf of China National Accreditation Service
for Conformity Assessment

China National Accreditation Service for Conformity Assessment (CNAS) is authorized by Certification and Accreditation Administration of the People's Republic of China (CNCA) to operate the national accreditation schemes for conformity assessment. CNAS is the signatory to International Laboratory Accreditation Cooperation Multilateral Recognition Arrangement (ILAC MRA) and Asia Pacific Laboratory Accreditation Cooperation Multilateral Recognition Arrangement (APLAC MRA).

No.CNAS AL 2

0013332