

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

**Ex Management Committee, ExMC**

**TITLE: IECEX Surveillance report for Korea Gas Safety Corporation (KGS) an  
accepted ExTL and includes an extension to scope**

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**INTRODUCTION**

**This document contains the IECEX Surveillance report for Korea Gas Safety  
Corporation (KGS) an accepted ExTL and includes a report for an extension of scope.**

**The application for scope extension is issued for voting on during the ExMC  
Shanghai Meeting.**

***Chris Agius***  
**IECEX Secretariat**

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# IECEX EXTENSION OF SCOPE AND SURVEILLANCE FOR KGS, REPUBLIC OF KOREA

## (TEST LABORATORY – ExTL)

### Type of Assessment:

Extension of scope and surveillance for ExTL

2

#### 1. OBJECT AND FIELD OF APPLICATION

##### 1.1 *Country:*

Republic of Korea

##### 1.2 *Name of Candidate ExTL*

Institute of Gas Safety R&D  
Korea Gas Safety Corporation (KGS)

##### 1.3 *Members of the Assessment Team*

Jim Munro, Lead Assessor

##### 1.4 *Place and Date of Assessment*

KGS  
332-1 Daeya Dong, Shihung-Shi  
Kyunggi-Do  
KOREA 429-712

20-21 June 2006

##### 1.5 *Assessment References*

- i) IECEx 02 Second Edition
- ii) IECEx Operational Document OD/003
- iii) IECEx Operational Document OD/009
- iv) ISO/IEC 17025:1999

- v) IECEx Technical Guidance Documents
- vi) ExTAG decision sheets

## 1.6 *Scope of Application*

Existing:

Product Category	Standard
General Requirements	IEC 60079-0
Flameproof Enclosures “d”	IEC 60079-1
Pressurised Enclosures “p”	IEC 60079-2
Increased Safety “e”	IEC 60079-7
Intrinsic Safety “i”	IEC 60079-11

Proposed extension of scope:

Type “n” Protection	IEC 60079-15
Type “m” Protection (encapsulation)	IEC 60079-18

## 1.7 *Candidate ExTL Persons Interviewed*

Name	Position
Dal-Young Park	President of KGS
Dr Ji-Yoon Kim	Executive Director, Institute of Gas Safety R&D
Jin-Jun Kim	General Manager, Gas Appliances Division
Hae-Duk Jung	Manager Hazardous Locations Equipment, Gas Appliances Division and Quality Manager
Chang-Woo Lee	Technical Manager
Dae-Sik Moon	Locations Equipment Team
Ja-Song Koo	Locations Equipment Team

## 1.8 *Legal Entity of the Candidate ExTL*

KGS is a public body established under Article 28 of the High Pressure Gas Safety Control Law. There is a certificate of registration 140-82-00740 with the Taxation Department for KGS.

## 1.9 *Associated ExCB*

The ExTL is integral with the ExCB.

### 1.10 *Financial Support*

KGS is self-funding.

### 1.13 *History*

Initially established in 1974 with the name KGS being used since 1979. In 1995 the Institute of Gas Safety Technology was established as an annex research centre. In 1998 it became an affiliate of the Ministry of Commerce, Industry and Energy, and was designated as a certification body for electrical explosion-proof performance.

## 2. ORGANISATION

### 2.1 *Names, Titles and Experience of the Senior Executives*

Name	Title
Jin-Jun Kim	General Manager
Chang woo Lee	Manager ExTL

### 2.2 *Name, Title and Experience of the Quality Management Representative*

Name	Title	Experience
Hae-Duk Jung	Manager, Hazardous Locations Equipment, and Quality Manager	12 years in Ex

### 2.3 *Name and Title of Nominated Principal Contact*

Name	Title
Hae-Duk Jung	As above

### 2.4 *Employees*

There are four staff involved in assessment and testing in the ExTL.

### 2.5 *Organisational Structure*

See Annex 1

## 3. RESOURCES

The KGS laboratory is adequately resourced with test equipment for most of the tests covered in the requested for scope extension. Where they do not have capability sub-contracting has been arranged with a local laboratory (KTL) which has accredited for those activities.

Temperature rise testing of electric motors will be achieved by witnessing tests at manufacturers' premises.

#### **4. TEST METHODS**

KGS has developed test methods for the critical new tests, although some of these are still in draft form (see below).

Tests were witnessed being done for the following:

IEC 60079-15 Clause 21.2.10.1 – Endurance test

IEC 60079-18 Clauses 8.2.3.3 & 8.2.3.4 Thermal cycling test & Acceptance criteria

#### **5. TEST REPORTS AND RECORDS**

##### **5.1 Test Reports Issued**

No test reports have been issued for the two techniques to date.

##### **5.2 Test Records**

Not considered for extension of scope.

#### **6. CALIBRATION**

Only considered for extension of scope (see below).

#### **7. DOCUMENTATION**

##### **7.1 *Quality Manual***

There is a comprehensive quality manual

##### **7.2 *Document Change Control***

Not considered for extension of scope.

#### **8. CONFIDENTIALLY**

Not considered for extension of scope.

#### **9. NATIONAL ACCREDITATION**

KGS has national accreditation from KOLAS (see Annex 2) . The scope of this accreditation also covers IEC 60079-15 and 60079-18.

#### **10. RECOGNITION AND AGREEMENTS**

Not considered for extension of scope.

#### **11. INTERNAL AUDIT AND PERIODIC REVIEW**

Internal audit and periodic review occur on an annual basis. Examples of these were reviewed.

#### **12. COMPLAINTS MECHANISM**

KGS has a complaints procedure but has had no recent complaints

### 13. SPECIAL FACTS TO BE NOTED

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

- Details of issues raised and how these have been resolved.
- The assessment plan and assessor's notes.
- TGDs for the two new techniques.

### 14. COMMENTS

The following issues were found during the assessment:

1. For the demonstrated test of Thermal Endurance Test (8.2.3) – the test voltage initially applied did meet the requirements that the required 'voltage that gives the most unfavourable condition'. This was also not included in the work test procedure ACB-B-2200 7. 'Thermal Endurance Test'.
2. The procedures for IEC 60079-18 were only in draft form in English. These will need to be issued as Quality Documents.
3. There were two procedures for temperature test for Ex m – it was not clear why this was so.
4. Where there were multiple pages of the procedures there was no identification on the subsequent pages to link them to the first page and shown what was the procedure number and issue status.
5. There was a balance on the laboratory (CHYO) that was indicated as being the one that would be used for test and which had a valid calibration sticker on it. However, in closer investigation it was found that this balance had been declared unserviceable. There was nothing on the balance to indicate this. Another balance (Sartorius) was available and was about to be calibrated. This balance is calibrated every two years.
6. Some of the procedures for Ex n and Ex m had the same identifying numbers (ACB-B-2200 with a number against the test heading). Other procedures, such as those for Ex i also use the ACB-B-2200 number. 4.3.2.3 of ISO/IEC 17025 requires quality system documents generated by the laboratory to have a unique number.
7. The pressure measuring device used for demonstrating the restricted breathing test was not in calibration. Calibration will need to be ensured for actual testing.
8. There is no procedure to cover witness testing at manufacturers' premises. This needs to cover matters like the control exercised by KGS, what instrumentation is to be used and the traceability of that instrumentation.

All the above issues were subsequently resolved with follow-up reviews being conducted by the Assessor.

The follow-up reviews were conducted to assess compliance with IECEx Scheme requirements. The conclusion being that IECEx Scheme requirements have now been met.

## 15. RECOMMENDATION

Based on the assessment performed on 19 and 20 June 2006 KGS is recommended for continuing acceptance in the IECEx scheme as a Testing Laboratory (ExTL) with the scope and extension of scope shown above.

As no test reports have been issued for the two techniques, Ex n and Ex m, to date and hence experience is limited, it is recommended that the first ExTR issued for each type of protection be subject to review within the IECEx Scheme.

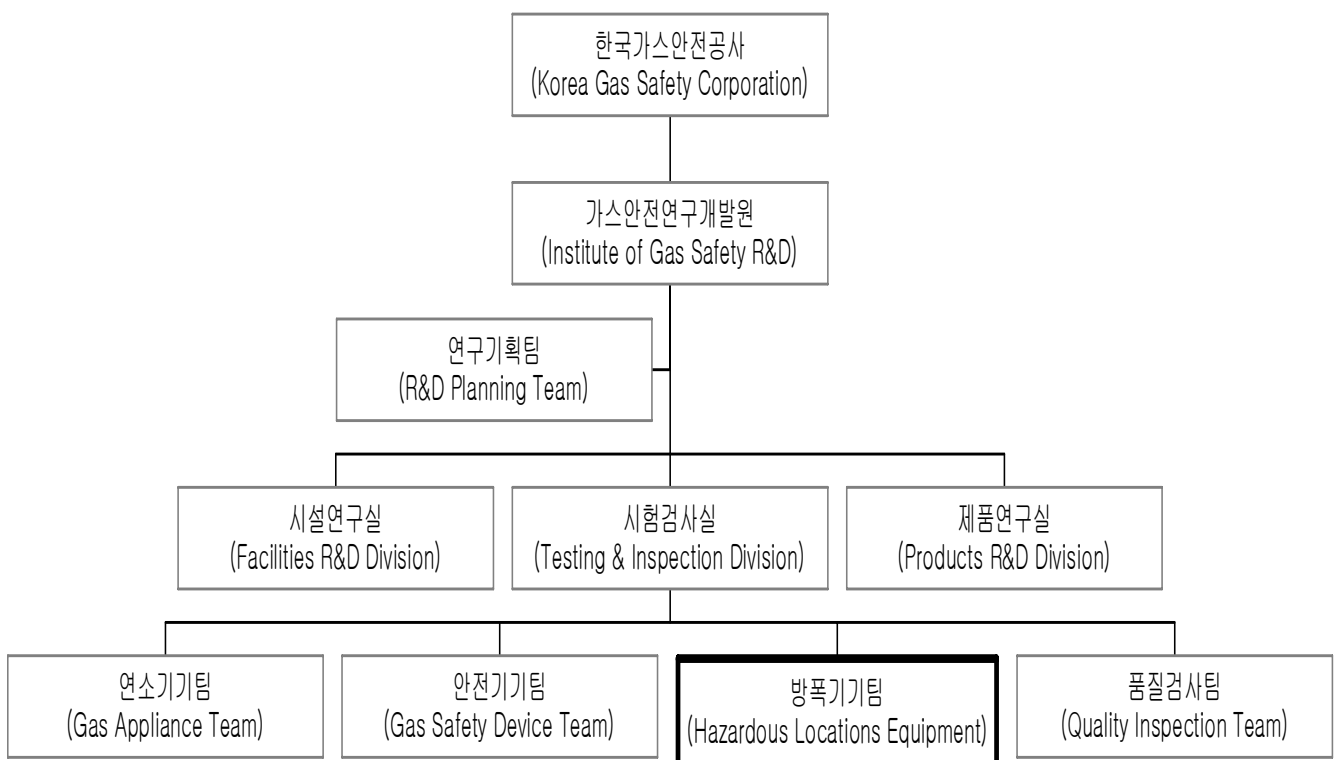
Jim Munro  
Lead Assessor  
12 July 2006

### List of Annexes:

Annex 1: KGS Organisation Chart  
Annex 2: KOLAS Accreditation

 한국가스안전공사	Organization and Management	표준번호	Ex-M-02
		페이지	11 / 12

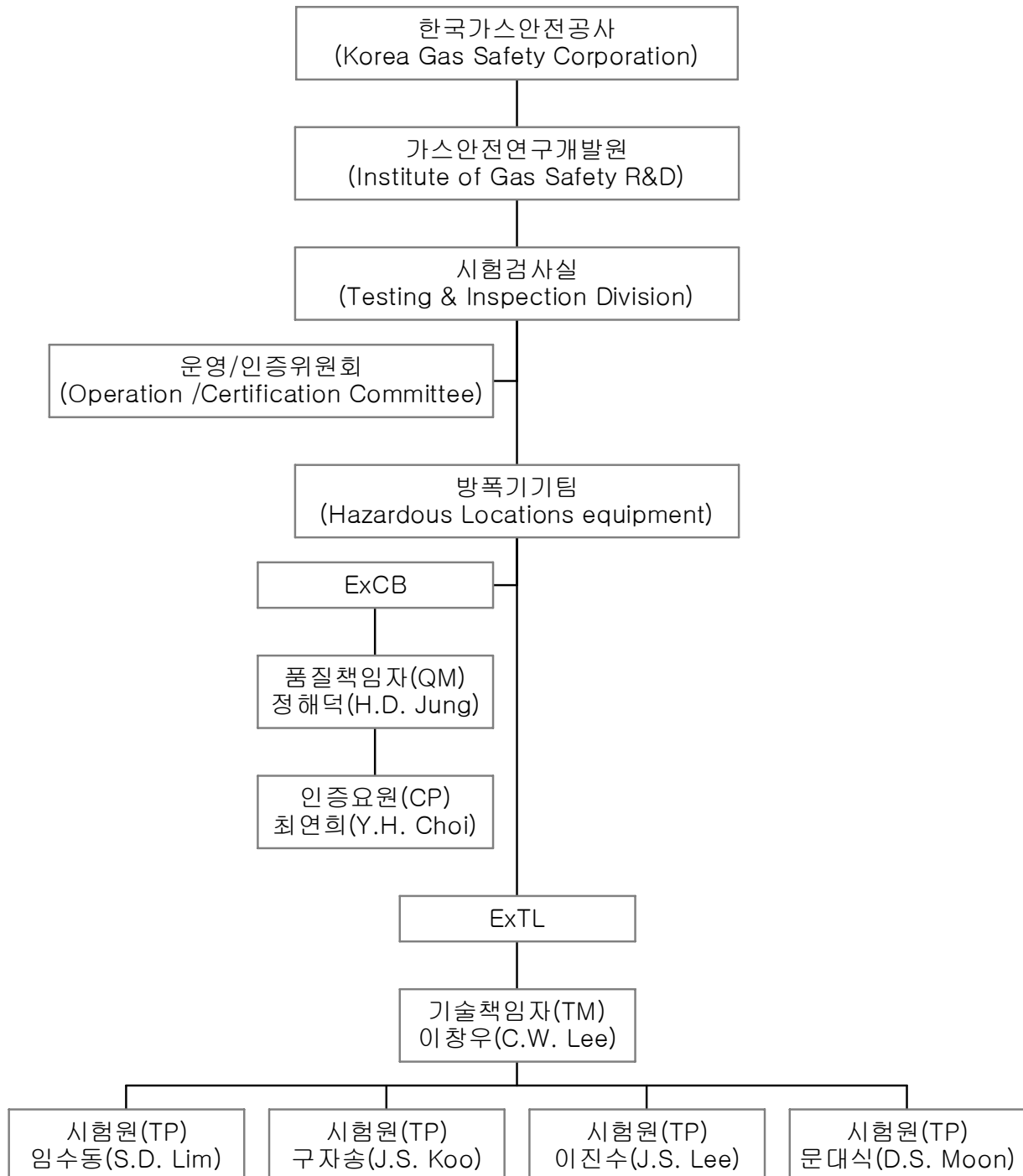
별표 1. Organization chart 1





 한국가스안전공사	Organization and Management	표준번호	Ex-M-02
		페이지	12 / 12

별표 2. Organization Chart 2





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## 국제공인시험기관인정서

기 관 명 : 한국가스안전공사 가스안전연구개발원

대 표 자 : 김 지 윤

법 인 등 록 번 호 : 114671-0001406

사업자등록번호 : 140-82-00740

법 인 주 소 : 경기도 시흥시 대야동 332-1

사 업 장 소 재 지 : 경기도 시흥시 대야동 332-1

유효 기 간 : 2002년 12월 26일 ~ 2007년 12월 25일

인정분야 및 범위 : 별첨

국가표준기본법 제23조 및 동법시행령 제16조의 규정과  
KS A 17025:2000 인정요건에 의거 위와 같이 국제공인시험  
기관으로 인정합니다.

2006년 6월 12일

산 업 자 원 부  
기 술 표 준 원 장





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## 3. 전기시험

## 3.006 산업용 전기기기

규격번호	규격명
노동부고시 제2003-18호	방호장치성능검정규정
KS B 0161:1999	표면 거칠기 정의 및 표시
KS C IEC 60079-0:2001	방폭 전기 기계·기구 - 일반요구사항
KS C IEC 60079-1:2001	방폭 전기 기계·기구 - 제1부: 내압방폭구조
KS C IEC 60079-11:2001	방폭 전기 기계·기구 - 제11부: 본질안전방폭구조
KS C IEC 60079-15:2003	방폭 전기 기계·기구 - 제15부: 비점화 방폭 구조
KS C IEC 60079-18:2003	방폭 전기 기계·기구 - 제18부: 몰드 방폭 구조
KS C IEC 60079-2:2001	방폭 전기 기계·기구 - 제2부: 압력방폭구조
KS C IEC 60079-2:2001	방폭 전기 기계·기구 - 제3부: 본질 안전 회로용 불꽃 점화 시험 장치
KS C IEC 60079-5:2001	방폭 전기 기계·기구 - 제5부: 충전 방폭 구조
KS C IEC 60079-6:2001	방폭 전기 기계·기구 - 제6부: 유입방폭구조
KS C IEC 60079-7:2001	방폭 전기 기계·기구 - 제7부: 안전증방폭구조
KS C IEC 60112:2002	습한 조건에서 고체 절연 재료 비교 트레이킹 지수 및 내트레이킹 지수 평가 방법
KS C IEC 60529:2002	외곽의 밀폐 보호 등급 구분(IP코드)
KS C IEC 61241-1-1:2003	분진 방폭 전기 기계·기구 - 제1-1부: 용기 및 표면 온도 제한에 의한 보호
KS C IEC 61241-2-1:2003	분진 방폭 전기 기계·기구 - 제2부: 시험 방법 - 제1절: 분진의 최소 점화 온도
KS C IEC 61241-2-2:2003	분진 방폭 전기 기계·기구 - 제2부: 시험 방법 - 제3절: 분진/공기 혼합물의 최소 점화 에너지
IEC 60079-0:2004	Electrical apparatus for explosive gas atmospheres Part 0: General requirements
IEC 60079-1:2003	Electrical apparatus for explosive gas atmospheres - Part 1: Construction and verification test of flameproof enclosures of electrical apparatus
IEC 60079-11:1999	Electrical apparatus for explosive gas atmospheres - Part 11: Intrinsic safety 'i'
IEC 60079-15:2005	Electrical apparatus for explosive gas atmospheres - Part 15: Electrical apparatus with type of protection 'n' (Non-Sparking)
IEC 60079-18:2004	Electrical apparatus for explosive gas atmospheres - Part 18: Encapsulation 'm'



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## 3.006 산업용 전기기기

규격번호	규격명
IEC 60079-2:2001	Electrical apparatus for explosive gas atmospheres - Part 2: Electrical apparatus, type of protection 'p' (Pressurization)
IEC 60079-5:1997	Electrical apparatus for explosive gas atmospheres - Part 5: Powder filling "q"
IEC 60079-6:1995	Electrical apparatus for explosive gas atmospheres - Part 6: Oil-immersion 'o'
IEC 60079-7:2001	Electrical apparatus for explosive gas atmospheres - Part 7: Increased safety 'e'
IEC 60112:2003	Method for the determination of the proof and the comparative tracking indices of solid insulating materials
IEC 60529:2001	Degrees of protection provided by enclosures (IP Code)
IEC 61241-1-1:1996	Electrical apparatus for use in the presence of combustible dust - Part 1: Electrical apparatus protected by enclosures - Section 1: Specification for apparatus
IEC 61779-1:1998	Electrical apparatus for the detection and measurement of flammable gases - Part 1: General requirements and test methods
IEC 61779-4:1998	Electrical apparatus for the detection and measurement of flammable gases - Part 4: Performance requirements for group II apparatus indicating up to 100% lower explosive limit
IEC 61779-5:1998	Electrical apparatus for the detection and measurement of flammable gases - Part 5: Performance requirements for group II apparatus indicating a volume fraction up to 100% gas
ISO 4892-1:1999	Plastics - Methods of exposure to laboratory light sources - Part 1: General guidance