



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

Title: Re-assessment Report for the continued acceptance of VTT Expert Services Ltd as an Accepted Ex Test Laboratory (ExTL)

To: Members of the IECEx Management Committee, ExMC

Introduction

In accordance with the 5 year re-assessment plan for the surveillance and monitoring of bodies within the IECEx System, the following document contains the IECEx Re-assessment Report for VTT Expert Services Ltd as an Accepted Ex Test Laboratory (ExTL)

This report is issued for endorsement during the 2013 Fortaleza, Brazil Meeting.

Chris Agius
IECEx Secretariat

IECEx Secretariat Standards Australia Building 286 Sussex Street Sydney NSW 2000 Australia	Tel: +61 2 8206 6940 Fax: +61 2 8206 6272 Email: chris.agius@iecex.com
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IECEx ASSESSMENT REPORT FOR VTT EXPERT SERVICES Ltd (IECEx TEST LABORATORY ExTL)

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:*

Finland

1.2. *Name of Candidate TL*

VTT Expert Services Ltd.

1.3. *Members of the Assessment Team*

Jim Munro – IECEx Lead Assessor

Herbert Peters – IECEx Expert Assessor

Risto Suominen – FINAS Lead Assessor

1.4. *Place and Date of Assessment*

VTT Expert Services Ltd

Kivimiehentie 4

P.O.Box 1001

FI-02044 VTT

15-16 September 2011

1.5. *Assessment References*

- i) IECEx 02 IECEx Certified Equipment Scheme covering equipment for use in explosive atmospheres – Rules of Procedure
- ii) IECEx OD 003-2 Procedures for the assessment, surveillance assessment and reassessment of ExCBs and ExTLs
- iii) IECEx OD 009 Issuing of CoCs, ExTRs and QARs
- iv) ISO/IEC 17025:2005

- v) IECEx Technical Guidance Documents (TGDs)
- vi) ExTAG decision sheets (DSs)

1.6. **Scope of Assessment**

Number	Title
60079-0 Edition 6	Explosive atmospheres - Part 0: Equipment - General requirements
60079-2 Edition 5	Explosive atmospheres - Part 2: Equipment protection by pressurized enclosure «p»
60079-5 Edition 3	Explosive atmospheres - Part 5: Equipment protection by powder filling «q»
60079-6 Edition 3	Explosive atmospheres - Part 6: Equipment protection by oil immersion «o»
60079-7 Edition 4	Explosive atmospheres - Part 7: Equipment protection by increased safety "e"
60079-11 Edition 6	Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"
60079-15 Edition 4	Electrical apparatus for explosive gas atmospheres - Part 15: Construction, test and marking of type of protection "n" electrical apparatus
60079-18 Edition 3	Electrical apparatus for explosive gas atmospheres - Part 18: Construction, test and marking of type of protection encapsulation "m" electrical apparatus
60079-25 Edition 2	Electrical apparatus for explosive gas atmospheres - Part 25: Intrinsically safe systems
60079-26 Edition 2	Explosive atmospheres - Part 26: Equipment with equipment protection level (EPL) Ga
60079-27 Edition 2	Explosive atmospheres – Part 27: Fieldbus intrinsically safe concept (FISCO)
60079-28 Edition 1	Explosive atmospheres - Part 28: Protection of equipment and transmission systems using optical radiation – for 'op is' only.
60079-31 Edition 1	Explosive atmospheres – Part 31: Equipment dust ignition protection by enclosure "t"
61241-0 Edition 1	Electrical apparatus for use in the presence of combustible dust - Part 0: General requirements
61241-1 Edition 1	Electrical apparatus for use in the presence of combustible dust - Part 1: Protection by enclosure "tD"
61241-1-1	Part 1: Electrical apparatus protected by enclosures - Section 1: Specification

Number	Title
Edition 2	for apparatus
61241-4 Edition 1	Electrical apparatus for use in the presence of combustible dust Part 4: Protection by pressurization "pD"
61241-11 Edition 1	Electrical apparatus for use in the presence of combustible dust – Part 11: Protection by intrinsic safety 'iD'
61241-18 Edition 1	Electrical apparatus for use in the presence of combustible dust Part 18: Protection by encapsulation "mD"

1.7. *Candidate TL Persons Interviewed*

Name	Position
Risto Sulonen	Product Manager
Tiina Ala-Outinen	Manager, Services
Mari Juntunen	Quality Manager
Martti Sirola	Senior Expert
Kari Koskela	Expert

1.8. *Legal Entity of The ExTL*

VTT Expert Services Ltd is fully state-owned company and a part of VTT Group. The document from the trade register was viewed showed that they were registered as a limited company in 12 November 2009.

1.9. *Associated ExCB*

The associated ExCB is also within VTT Expert Services Ltd using common staff.

1.10. *Financial Support*

The operation of VTT Export Services is funded for its day-to-day activities and capital investment through income from its commercial operations.

1.11. *History*

Since its establishment over 60 years ago, VTT has become an important centre of technological expertise and developer of new technologies. The development path of Finland as a whole as well as the events and phenomena of each era are reflected in VTT's history.

VTT's six decades

1940s: President Ryti signs the Act on the Technical Research Centre of Finland

1950s: The Post-war era

1960s: VTT becomes Finland's biggest research institute

1970s: Reorganised research centre moves to Otaniemi

1980s: Research programmes serving the needs of industry

1990s: Electronics and information technology research as the engine of development

2000-2004: Strategic technology themes steer research

VTT started Ex- Testing in 1981, was accepted as a testing laboratory under the old EU directive and became ATEX Notified Body in 2000. It was accepted as an IECEx ExCB and ExTL in 2006.

VTT Expert Services Ltd started in 1 January 2010 and continued all VTT's Ex-testing functions.

2. ORGANISATION

2.1. Names, Titles and Experience of the Senior Executives

Name	Title	Experience
Tiina Ala-Outinen	Service Manager	> 20 years
Risto Sulonen	Product Manager	>15 years

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

Name	Title	Experience
Mari Juntunen	Quality Manager	>10 years

2.3. Name and Title of Nominated Principal Contact

Name	Title	Comments
Risto Sulonen	Product Manager	

2.4. Employees

Name	Title	Experience
Martti Siirola	Senior Expert	> 15 years
Kari Koskela	Expert	> 3 years

2.5. Organizational Structure

The organizational structure is shown in the following annexes:

Annex 1. Overall Organisation Chart of VTT Expert Services

Annex 2: Function Organisation Chart for Ex-Team

3. RESOURCES

There are four people employed the Electrical Ex Apparatus team within Fire safety and Functionality of Electronics Service Area. One had submitted his resignation at the time of the assessment. VTT indicated they plan to use someone part-time from another area to fill this position. All staff remaining have appropriate skills and experience for assessment and testing to the range of standards contained in the scope.

About a month prior to the assessment visit VTT had moved its test facilities from another location nearby. The facilities were judged by the assessment team to be appropriate for testing to the standards covered by the scope of this application.

4. DOCUMENTATION

4.1. *Quality Manual*

There is an overall Corporate Governance document for the VTT Group. But this does not impact directly on VTT services since they operate as a separate company. Then there is a VTT Expert Services Quality Manual. This includes links on the intranet to various tools to be used by staff, such as all report information, including the report register. This makes use of the document handling system, call DoHa. Next are the VTT Group instructions and instructions for the specific branches such as IECEx Fire Safety and Functionality of Electronic Services under this is Electrical Ex Apparatus team which also has its own specialized instructions.

4.2. *Procedures*

There are a range of procedures developed specifically for IECEx. These are in the IECEx certification file DoHa. From ExCB Two of the major procedures are CBEx-006 *Guide to IECEx Certification* and CBEx-001 *Rules for operation as an Ex Testing and Certification Body*. The procedures were found to be appropriate to IECEx.

4.3. *Work Instructions*

Work instructions are in T001 1.13 -file in Document Handling-system (DoHa) appropriate and found to meet the requirements of the IECEx.

4.4. *Records*

The Ex - Team maintains an Excel spreadsheet showing all Ex – Certificates (other than IECEx certificates) and Quality Assessment reports issued. The list is available to the public on request. Since the IECEx certificates and ExTRs are listed on the IECEx website, VTT does not maintain a spreadsheet for these.

Two of the major procedures are CBEx-006 *Guide to IECEx Certification* and CBEx-001 *Rules for operation as an Ex Testing and Certification Body*. The procedures were found to be appropriate to IECEx.

4.5. *Document Change Control*

Documentation is kept systematically up to date in electronic form in server in DoHa (Document Handling/control). Documents are reviewed periodically to check those that need updating. There is a procedure for making changes to documents. Updated versions are checked and accepted. Changes, for example in work instructions, are shown in the updated documents. Changes are also advised to persons involved in operation.

4.6. *Test Records*

Test records are kept in the archive in hard copy, filed according to customer. The storage is appropriate 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 in the preceding four years for each type of protection:

Standards	Title	Number of issued test reports				Total
		2009	2010	2011	2012	
						Part 0 included in numbers below
60079-2	Equipment protection by pressurized enclosure “p”	1		1		2
60079-6	Equipment protection by oil immersion “o”					0
60079-7	Equipment protection by increased safety “e”		1	4		5
60079-11	Equipment protection by intrinsic safety “i”	5	10	13	10	38
60079-15	Equipment protection by type of protection “n”	2	5	7	4	18
60079-18	Equipment protection by encapsulation “m”					0
60079-25	Intrinsically safe electrical systems				2	2
60079-26	Equipment with equipment protection level (EPL) Ga	2	6	8	1	17
60079-27	Fieldbus intrinsically safe concept (FISCO)	1	2	2		5
60079-28	Protection of equipment and transmission systems using optical radiation					0
60079-31	Equipment dust ignition protection by enclosure “t”			3	2	5
61241-1	Protection by enclosure “tD”	1	2	3		6
61241-4	Type of protection “pD”					0
61241-11	Protection by intrinsic safety “iD”	1	1	1	1	4

In addition to the above, VTT also issues test reports for ATEX where an IECEx ExTR is not required.

CALIBRATION

The calibration of equipment in the Ex Team is managed by one of the staff.

For some instruments the calibration periods have been extended. It was explained that this was done on the basis of the instrument have stable readings over a period of years.

An example of where this process had been documented was viewed and found to be appropriate.

6. CONFIDENTIALITY

The VTT Expert Services employment contract requires every employee to sign a confidentiality agreement. Examples of confidentiality agreements for both staff and the Advisory Committee were viewed and found to be satisfactory to meet the requirements of the IECEx?

7. NATIONAL ACCREDITATION

VTT hold national accreditation from FINAS valid to 13 December 2013 for Ex testing. The certificate is shown in Annex 3 and the schedule in Annex 4.

8. RECOGNITION AND AGREEMENTS

VTT Expert Services has agreements with KOSHA in Korea and TÜV Rheinland UL do Brasil Ltda.

9. INTERNAL AUDIT AND PERIODIC REVIEW

The operation was last internally audited in May 2011 according to the audit plan. The internal auditor had been accepted by organisation to audit according to ISO/Guide 65 (EN 45011), ISO/IEC 17025 and ISO/IEC 17020. The report from audit was quite informative. Four non-conformities were also recorded. Non-conformities were also recorded in the HAKE-database. All Non-conformities were dealt with and have been closed.

VTT Expert Services-level management reviews occur twice a year. The last Service area management review was made on October 2010. The records of the meeting showed that relevant people took in reviews and important items like impartiality, resources, and internal audit results were addressed. The next review is planned for November 2011. The assessment team found the management review to be appropriate for IECEx.

10. COMPLAINTS AND APPEALS (Including appeals to IECEx)

In the first instance appeals are expected to be addressed by the VTT Advisory Committee, but provision is then made for appeals to go to IECEx. This is addressed in IECEx guide CBEx-006, a copy of which is made available to applicants, and also in CBEx-001. The appeals process meets IECEx requirements.

11. SPECIAL FACTS TO BE NOTED

11.1. *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 and include:

- Details of issues raised and how these have been resolved
- Checklist for ISO/IEC 17025
- Completed technical guidance notes (TGDs) for optical radiation
- Photos of the tests witnessed
- Assessors' notes

11.2. *Witnessed tests*

The following tests were witnessed at the assessment visit:

- Intrinsic safety battery test for temperature rise with short circuit. IEC 60079-11 Clause 10.5.3 b).
- Use of spark test apparatus on artifact supplied by PTB for proficiency testing.
- Temperature rise of an Ex e luminaire.
- 4 kPa Pressure test followed by IP6X test to IEC 60079-31.

In general the tests were done satisfactorily but a few issues were raised and these are included in the summary below.

12. COMMENTS (Including issues found during assessment)

The following is a summary of issues found and resolved to the satisfaction of the assessment team:

- There were some issues with calibration of instruments and their labeling. Subsequently instruments were calibrated or replaced with calibrated instruments. The labeling was corrected where necessary. Procedures were changed to ensure calibration reports include appropriate tolerances. A periodic check of the spark test apparatus was introduced.
- Problems with maintaining steady pressure for the overpressure test to IEC60079-31 were fixed.
- Gauges for measuring pressure and volume changes for the IP testing were purchased.
- The dust chamber for IP5X/6X testing was modified to improve suspension of dust.
- A recorder was purchased to provide evidence of the period carried out for test for resistance to light.
- A suitable material was purchased for carrying out the temperature test for IEC 60079-31.
- The uncertainty of measurement was improved of temperature measurement.
- Some issues were raised with ExTRs which have been resolved, including the reissue of one ExTR.
- Staff competency records were updated to reflect the scope extension.

13. RECOMMENDATION

Based on the re-assessment performed on 15-16 September 2011, VTT Expert Services 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, including the scope extension for IEC 60079-28 for 'op is'.

Jim Munro
IECEx Lead Assessor

Herbert Peters
IECEx Expert Assessor

Risto Suominen
FINAS Lead Assessor

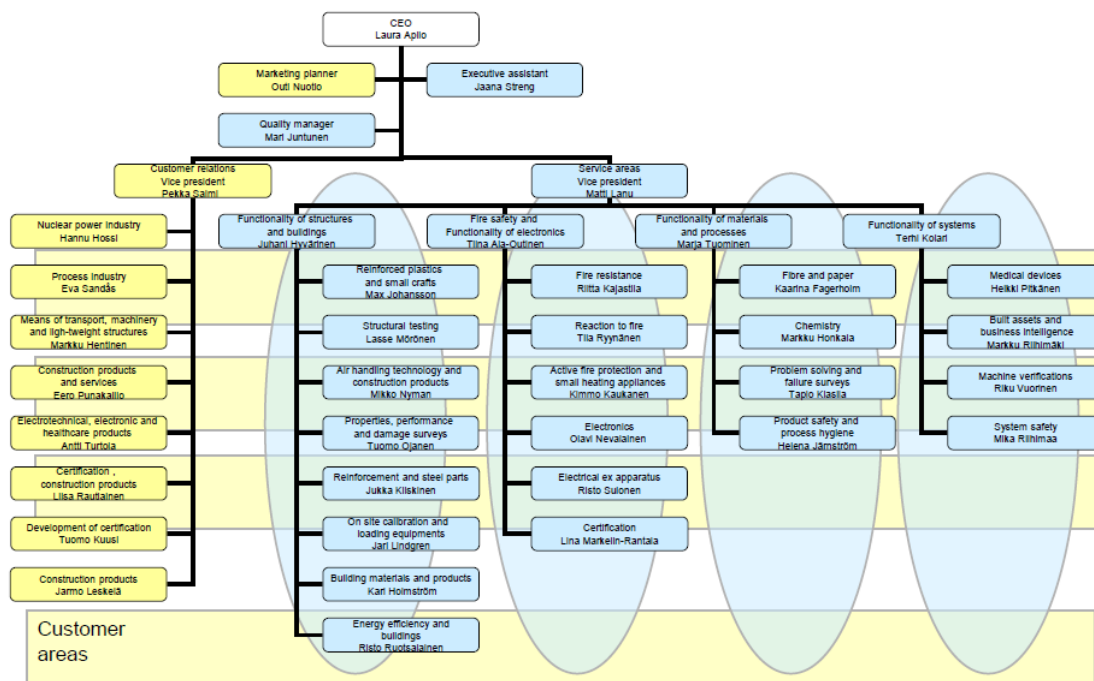
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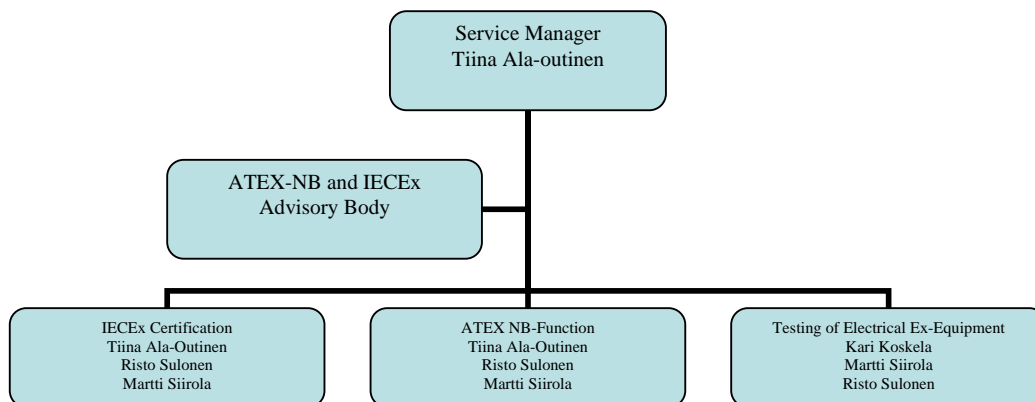
List of Annexes:

1. Overall Organisation Chart of VTT Expert Services
2. Function Organisation Chart for Ex-Team
3. Accreditation Certificate for VTT to ISO/IEC 17025
4. Extract of Scope of accreditation to ISO/IEC 17025


Annex 1 Overall Organisation Chart of VTT Expert Services



Annex 2 Function Organisation Chart for Ex-Team



Annex 3
Accreditation Certificate for VTT to ISO/IEC 17025



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ACCREDITATION CERTIFICATE

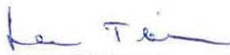
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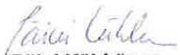
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Akkreditointipäätös on voimassa 31.12.2013. asti.
Tiedot akkreditoinnin pätevyysalueesta ja voimassaolosta on esitetty verkkosivuilla www.finas.fi.

is testing laboratory No. T001 accredited by FINAS Finnish Accreditation Service.
The accreditation decision is valid until 31.12.2013.
Information about the scope and the current status of the accreditation is available on the web page www.finas.fi.

Toimielin täyttää seuraavan standardin vaatimukset:
The above body conforms to the requirements of the following standard:

SFS-EN ISO/IEC 17025:2005
Espoo 01.01.2010


Leena Tikkanen


Päivi Kähkönen

Annex 4
Extract of Scope of accreditation to ISO/IEC 17025

PÄTEVYYSALUE SCOPE OF ACCREDITATION		
Testattava materiaali / tuote <i>Material / product tested</i>	Testityyppi, mittaustalue <i>Type of test, measured range</i>	Testausmenetelmä <i>Test method</i>
Raskaan ja pitkän ajoneuvon kilvet <i>Rear marking plates for heavy and long vehicles</i>	Lämmön ja kylmänkestotesti <i>Test of heat and low-temperature resistance</i>	ECE Regulation No 70 - Annex 9
Räjähdyssuojattujen laitteiden testaus <i>Testing of explosion protected equipment</i>		
Yleiset vaatimukset <i>General requirements</i>	Tyypinhyväksyntätestit <i>Type approval tests</i>	IEC/EN 60079-0,
Öljytäyteinen rakenne "o" <i>Oil immersion "o"</i>		IEC/EN 60079-6
Suojatuuletettu rakenne "p" <i>Pressurized apparatus "p"</i>		IEC/EN 60079-2
Hiekkatäyteinen rakenne "q" <i>Powder filling "q"</i>		IEC/EN 60079-5, lukuun ottamatta kohdan 12.3 (5.1.3) koetta <i>except the test in item 12.3 (5.1.3)</i>
Räjähdyssuorituskykyinen rakenne "d" <i>Flameproof enclosure "d"</i>		IEC/EN 60079-1, lukuun ottamatta testauksia asetyleenillä ja kohdan 19.3.2 koetta <i>except testing with acetylene and the test in item 19.3.2</i>
Varmennettu rakenne "e" <i>Increased safety "e"</i>	Tyypinhyväksyntätestit <i>Type approval tests</i>	IEC/EN 60079-7
Luonnostaan vaaraton rakenne "i" <i>Intrinsic safety "i"</i>		IEC/EN 60079-11
Suojausrakenne "n" <i>Type of protection "n"</i>		IEC/EN 60079-15
Massaan valettu rakenne "m" <i>Encapsulation "m"</i>		IEC/EN 60079-18
Luonnostaan vaarattomat kenttäväylät (FISCO) ja sytyttämättömät kenttäväylät (FNICO) <i>Fieldbus intrinsically safe concept (FISCO) and Fieldbus non-incendive concept (FNICO)</i>		IEC/EN 60079-27

PÄTEVYYSALUE SCOPE OF ACCREDITATION		
Testattava materiaali / tuote <i>Material / product tested</i>	Testityyppi, mitta-alue <i>Type of test, measured range</i>	Testausmenetelmä <i>Test method</i>
Optista säteilyä käyttävien laitteiden ja tiedonvälitysjärjestelmien suojaus <i>Protection of equipment and transmission systems using optical radiation</i>	Tyypin hyväksyntätestit <i>Type approval tests</i>	IEC/EN 60079-28
Kaivosvalaisimet <i>Caplamps for mines susceptible to firedamp</i>		IEC/EN 62013-1
Exi -järjestelmät <i>Intrinsically-safe electrical systems "i"</i>		IEC/EN 60079-25
Pölyräjähdysvaarallisiin tiloihin tarkoitetut koteloinnilla suojatut sähkölaitteet <i>Electrical apparatus protected by enclosure for use in the presence of combustible dust</i>		IEC/EN 61241-0 + IEC/EN 61241-1 Vain käytäntö A/ only practice A IEC 60079-31
Ryhmän II, laiteluokan I G sähkölaitteet <i>Electrical apparatus of equipment group II, category I G</i>		IEC/EN 60079-26
Ryhmän I, laiteluokan M1 laitteet, jotka on tarkoitettu pysyvän toiminnassa ilmaseoksissa, joissa räjähdysvaaran aiheuttaa kaivoskaasu ja/tai hiilipöly <i>Group I, Category M1 equipment intended to remain functional in atmospheres endangered by firedamp and/or coal dust</i>		EN 50303
Siirrettävät suojatuuletetut huoneet, joissa on tai ei ole sisäisiä päästölähteitä <i>Transportable ventilated rooms with or without an internal source of release</i>		EN 50381
Suojausrakenne "pD" <i>Type of protection "pD"</i>		IEC/EN 61241-4